Konrad Adenauer Stiftung

CLIMATE REPORT 2014

ENERGY SECURITY AND CLIMATE CHANGE WORLDWIDE

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FOREWORD

Dear Readers,

The effects of global climate change are already visible and will become even more apparent in the coming years. This makes it all the more pressing to forge political solutions that have a global reach and address the different stages of development, while at the same time being effective at a local level. Unfortunately, recent years have shown the considerable difficulties involved in reaching a multilateral agreement within the United Nations, despite the efforts of energy policy pioneers such as the European Union. The next steps in this process will become clear in the coming months and, at the latest, during the international climate conference in Paris in 2015, which aims to achieve a globally binding climate change agreement.

Over the past few years, energy policy has increasingly become the focus of discussions on climate change. Within those debates, opinions on using energy from fossil fuels and renewable energies differ widely. With its Energiewende (energy transition), Germany has decided to more or less completely convert its energy system and move it towards renewables. The United States is concentrating heavily on shale gas, which is already helping to reduce harmful carbon emissions by taking the place of more carbon-intensive energy sources such as coal. Other countries, such as China, do not currently have the luxury of choice; they have to feed their growing energy hunger with fossil fuels, renewable energies and nuclear power. Furthermore, the ongoing crisis in Ukraine is giving energy security, with its foreign and security policy component, a more important role in a sustainable climate policy. The Konrad-Adenauer-Stiftung's climate report, now in its third generation, explores these issues in detail.

This publication is the product of numerous contributions from the foreign offices of the Konrad-Adenauer-Stiftung. They provide an overview of national perceptions of energy and climate change in the selected countries.

I very much hope you find the report interesting and thought-provoking.

Dr. Gerhard Wahlers
Deputy Secretary-General
Konrad-Adenauer-Stiftung e. V.

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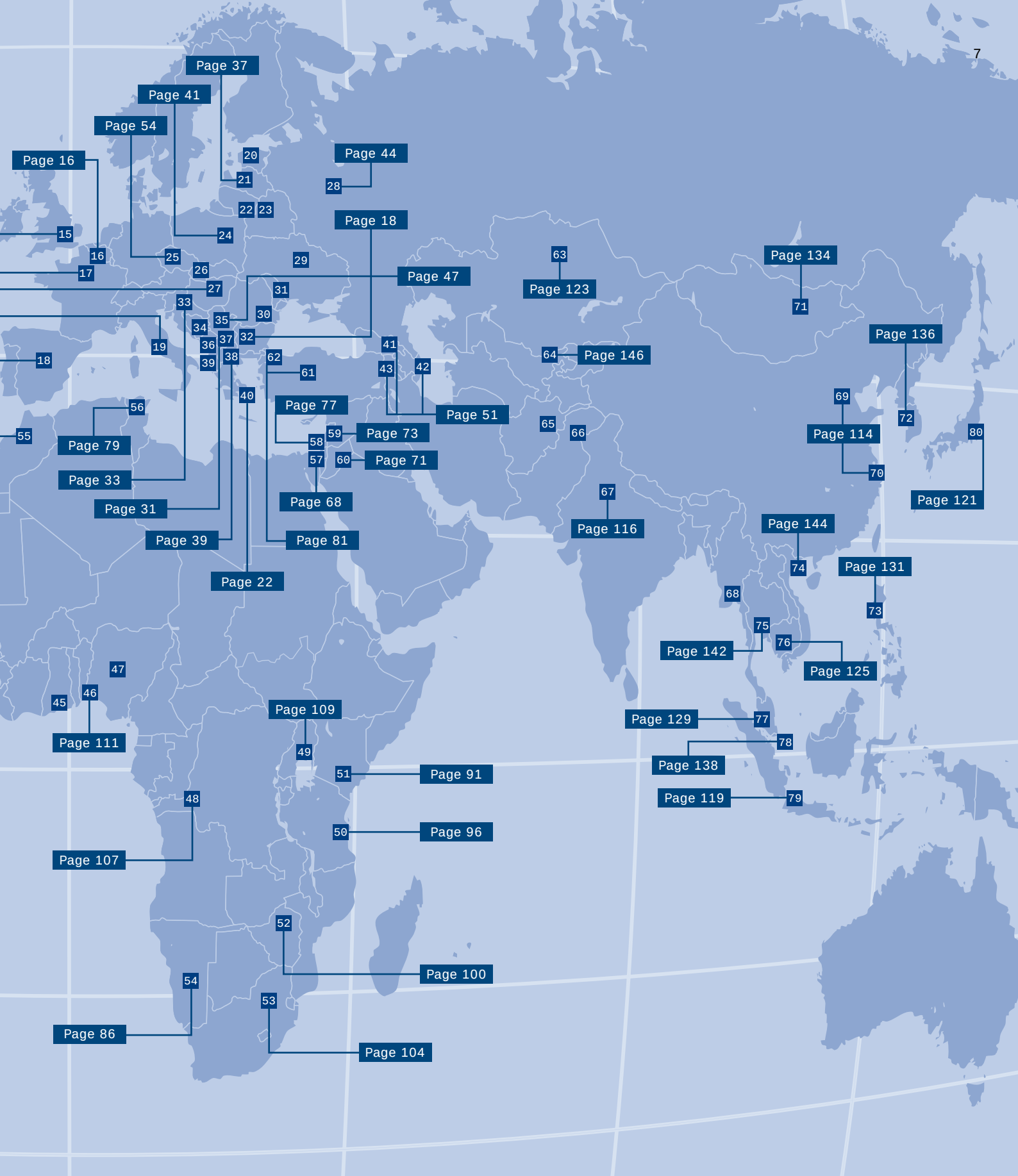

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ACRONYMS

ASEAN	Association of Southeast Asian Nations
AU	African Union
BMUB	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit)
CBD	Convention on Biological Diversity
CCS	Carbon capture and storage (or sequestration)
CDF	Comprehensive Development Framework (initiated and pursued by the World Bank)
CDM	Clean Development Mechanism (established by the Kyoto Protocol)
CEPAL	United Nations Economic Commission for Latin America and the Caribbean (Comisión Económica para América Latina y el Caribe)
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (see list on p. 9)
COP	Conference of the Parties (see list on p. 9)
CSD	Commission on Sustainable Development
DEG	German Investment and Development Corporation (Deutsche Investitions- und Entwicklungsgesellschaft)
EEC	European Economic Community
EU	European Union
EU-ETS	European Union Emissions Trading System (or Scheme)
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross domestic product
GEF	Global Environment Facility
GIZ	German Federal Enterprise for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
IKI	International Climate Initiative (Internationale Klimaschutzinitiative) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
IPCC	Intergovernmental Panel on Climate Change
KfW	Germany's development bank (Kreditanstalt für Wiederaufbau)
MDGs	Millennium Development Goals of the United Nations
NAMA	Nationally appropriate mitigation action
NATO	North Atlantic Treaty Organisation
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
OCHA	Office for the Coordination of Humanitarian Affairs
REDD / REDD+	Reducing Emissions from Deforestation and Forest Degradation (see p. 120)
SADC	Southern African Development Community
SDGs	Sustainable Development Goals of the United Nations (will supersede the MDGs)
SEEFCCA	South East European Forum on Climate Change Adaptation
TAP	Trans Adriatic Pipeline
UAE	United Arab Emirates
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP / MAP	Mediterranean Action Plan (under UNEP's umbrella)
UNESCO	United Nations Educational, Scientific and Cultural Organisation

UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
WHO	World Health Organisation
WTO	World Trade Organisation
WWC	World Water Council (initiator of the World Water Forum)
WWF	World Wide Fund for Nature

UNITED NATIONS CONFERENCES ON THE ENVIRONMENT AND CLIMATE CHANGE

UNCHE	United Nations Conference on the Human Environment, Stockholm 1972
UNCED	United Nations Conference on Environment and Development, Rio de Janeiro 1992; outcomes: UNFCCC, Agenda 21, Rio Declaration on Environment and Development, Forest Principles, CBD
COP1	UN Climate Change Conference, Berlin 1995; outcome: Berlin Mandate
COP2	UN Climate Change Conference, Geneva 1996
COP3	UN Climate Change Conference, Kyoto 1997; outcome: Kyoto Protocol
COP4	UN Climate Change Conference, Buenos Aires 1998
COP5	UN Climate Change Conference, Bonn 1999
COP6 / COP6-2	UN Climate Change Conference, The Hague 2000 and Bonn 2001
COP7	UN Climate Change Conference, Marrakesh 2001
COP8	UN Climate Change Conference, New Delhi 2002
COP9	UN Climate Change Conference, Milan 2003; outcome: CDM
COP10	UN Climate Change Conference, Buenos Aires 2004
COP11 / CMP1	UN Climate Change Conference, Montreal 2005
COP12 / CMP2	UN Climate Change Conference, Nairobi 2006
COP13 / CMP3	UN Climate Change Conference, Nusa Dua, Bali 2007
COP14 / CMP4	UN Climate Change Conference, Poznań 2008
COP15 / CMP5	UN Climate Change Conference, Copenhagen 2009
COP16 / CMP6	UN Climate Change Conference, Cancún 2010
COP17 / CMP7	UN Climate Change Conference, Durban 2011
Rio+20 (UNCSD)	United Nations Conference on Sustainable Development, Rio de Janeiro 2012; outcome: SDGs
COP18 / CMP8	UN Climate Change Conference, Doha 2012; outcome: Doha Amendment
COP19 / CMP9	UN Climate Change Conference, Warsaw 2013
Climate Summit 2014	UN Climate Summit, New York 2014 (also Leader's Climate Summit)
COP20 / CMP10	UN Climate Change Conference, Lima 2014
COP21 / CMP11	UN Climate Change Conference, Paris 2015

INTRODUCTION

CLIMATE AND ENERGY POLICY: DEPENDENCIES AND PROCESSES

Christian Hübner | Franziska Fabritius

Climate change is the global challenge of the 21st century. With the effects already starting to make themselves felt, securing effective global climate protection is becoming more urgent than ever. The next major step towards achieving this goal is scheduled to be taken in Paris in 2015. The idea is for the participating countries to adopt, under the auspices of the UN, an internationally binding agreement on climate change. Yet the international community will have to do a lot of work in the run-up to the conference if the talks are to succeed as hoped. This has given rise to numerous political processes, some of which

EUROPEAN CLIMATE AND ENERGY TARGETS FOR 2030

This year the European Union is planning to agree on EU-wide climate and energy targets for 2030. At the moment, the framework only extends to 2020 and aims to reduce emissions by 20 percent and achieve a 20 percent increase in both energy efficiency and the share of renewable energies. The 2030 targets should increase the existing goals, though opinions on this are deeply divided within the EU.

PUBLICATION OF THE IPCC'S FIFTH ASSESSMENT REPORT

The Intergovernmental Panel on Climate Change compiles reports on the latest scientific research (particularly from climatology) at intervals of about six years and helps political decision makers lay down national and international guidelines on the way to a binding agreement on climate change. The first part of the report addresses the scientific basis of climate change and was published in September 2013. The second part appeared in late March 2014 and focuses on impacts, adaptation and vulnerability associated with ongoing climate change. The third part, which came out in April 2014, looks at specific measures for handling climate change and sets out options for reducing greenhouse gas emissions. The report says that the international community can still comply with the agreed 2°C limit on global warming if it adopts an ambitious climate policy. Expanding measures for adapting to the unavoidable effects of climate change also has to play a key role.

SPECIAL UN SUMMIT IN NEW YORK IN SEPTEMBER 2014

At the invitation of UN Secretary-General Ban Ki-moon, numerous heads of state and government from all over the world, as well as leading figures from business, finance and civil society will convene in New York on 23 September 2014. The aim of the summit is to generate political momentum that will help the ongoing international climate talks – Lima this year, Paris in 2015 – arrive at a global agreement on climate change as planned.

have already happened while others will be happening soon. Whether or not they create enough momentum, though, remains to be seen. Political discussions on forging a global agreement on climate change have repeatedly shown that one-sided calls for carbon limits will encounter opposition if economic growth and security of energy supply are not taken sufficiently into account. This is why alternative energy sources, new supply solutions, technological innovations and managing the rise in global energy consumption always feature on the climate policy agenda.

UN CLIMATE CHANGE CONFERENCE IN LIMA IN DECEMBER 2014 (COP20)

The UN Climate Change Conference in Peru is set to collect all the existing climate-related announcements and drafts from the individual countries and incorporate them in a provisional negotiating text so that the parties can agree to a binding climate deal at COP21 in Paris in 2015. The content of the future regulations on mitigation, adaptation, financing, technology, transparency and capacity building in the field of climate change is to be fleshed out.

POST-2015 DEVELOPMENT AGENDA

This June saw the first session of the United Nations Environment Assembly, which was held within the context of the Post-2015 Development Agenda. The event stressed the urgent need for ambitious global environmental targets to be included in the agenda, and in doing so underscored the goals for the UN Climate Change Conference in Paris in 2015.

EUROPEAN ENERGY SECURITY

Against the backdrop of the Ukraine crisis, the European Commission recently published a new energy security strategy for Europe. It pays particular attention to natural gas supplies, since gas is much harder to substitute at short notice than other energy resources such as coal and oil.

CHANGES TO THE GLOBAL ENERGY MAP

At present, the global demand for energy is constantly rising. Key factors include the growing world population, urbanisation and, above all, the economic aspirations of newly industrialised countries such as China and India. In addition, developed countries are slowly starting to recover from the effects of the economic and financial crisis. The process is being accompanied by radical changes to the global energy map. Developed countries are increasing their autonomy over their energy supplies by boosting energy efficiency and using domestic and unconventional (though also more expensive) energy sources such as shale gas.

EUROPE AND NORTH AMERICA

THE EUROPEAN UNION

Eva Majewski

European climate policy has gained enormously in importance over recent years. The numerous regulatory activities are based mainly on the worrying findings coming out of climate research. The environmental damage caused by global warming plays the biggest role here, while other factors singled out include ocean warming, the melting ice sheets in Greenland and the Antarctic, and the decline in Arctic sea ice and the northern hemisphere's snow cover. Research also shows that the oceans are acidifying. This is giving the European Union the impetus to address the future of the world's climate. Climate and energy policy frameworks for 2030 will be crucial to maintaining and improving Europe's competitiveness. For this to happen, Europe has to be forced to abandon its business-as-usual approach and reduce its current dependency on imported fossil fuels. At the same time, it must learn how to conduct its economic activities with fewer emissions. This will involve substantial changes for many sectors and regions.

According to an overview in the action framework for Europe's future energy and climate policy, carbon emissions should be reduced not just by 20 percent, but by 40 percent. This target has its share of supporters. They believe that EU member states have not tried hard enough to cut emissions in the past. If the European Commission gets its way, the target will become binding for all member states in the future. So far, no binding regulations have been adopted for the EU's energy and climate policy for 2030. The long-term goal, however, is to arrive at a clear, shared vision and agree on evidence-based measures. Furthermore, renewable energies will have to make up a bigger share of overall energy consumption across Europe if the region is to reduce its greenhouse gas emissions. The European Commission wants the share to increase to 27 percent between 2020 and 2030. This is also set to apply to the whole of the European Union, though national targets will not be drawn up.

The methods for achieving the goals are a cause for controversy between the European Commission, the European Parliament and the EU's 28 heads of state and government. Although everyone agrees that targets are necessary, they are divided about how many to set and what the priorities should be. A point often made by observers is that, if the primary objective is to protect the climate, does it then make sense to set detailed targets for the (economic) expansion of renewable energies? Where might unintended and conflicting effects arise between individual EU member states?

The crisis in Ukraine further highlights the need for Europe and its neighbours to reduce their energy dependency, and the heads of state and government are giving ever clearer and more precise assignments to the Commission. The topic is becoming an increasingly important point on the agenda of the European Council, which is calling for the creation of an internal energy market. A report by the European Policy Centre, a Brussels think tank, stresses the necessity of such a market. However, it focuses on energy efficiency as a key goal for all member states and says the resulting costs should be viewed from a long-term and thus benefit-based perspective. Global warming and the health of EU citizens are cited as the main arguments. Yet efforts to create an internal energy market have failed so far. This is mainly because of the lack of electricity grids, which are being expanded at too slow a pace – and very rarely across borders. Many EU member states get just 10 percent of their energy from neighbouring energy producers.

Security is another issue, and one that affects both energy supply and energy generation. This can be seen in the case of shale gas extraction. While some EU member states, such as Poland, want to use the technology to achieve their climate targets, others feel that the process is too risky and stands to cause too much damage to the environment. A great deal of thought is going into finding possible solutions. Polish MEP Jerzy Buzek, for instance, acknowledges that while extracting shale gas should be seen as a welcome addition to the energy mix, it does not constitute a long-term solution.

Work on promoting the necessity of the common targets cannot, meanwhile, be considered complete. Countries that are still heavily dependent on coal – which besides Poland include mainly Bulgaria and Romania – baulk at the slightest whiff of change to climate policies and are seeking a wider and fairer distribution of the burden.

Meanwhile, the European Parliament is calling for a secure supply and, at the same time, for the identification of actual demand and possible stimulation from remote production and demand. Participants at the climate summit viewed Europe's position in the global competition for energy resources as a key task for the future. The internal energy market was discussed again, and it was noted that it could improve efficiency. EU Energy Commissioner Günther Oettinger said that rising demand meant EU states had to work especially hard on becoming more energy efficient. He also stressed the importance of overarching security of supply.

The internal energy market is also failing due to obstacles in emissions trading. Many stakeholders feel that the EU ETS needs to be reformed if the region is to create a sustainable, functioning energy system at the supranational level. They say the trading scheme, once reformed, should continue to be implemented because, as well as making the market more efficient for energy-intensive companies and increasing transparency and information density, it also generates financial resources that can then fund more climate initiatives.

Another study, this time on energy prices, has compared energy price levels (impacts on production costs in industry) and energy efficiency. It recommends reducing greenhouse gas emissions as comprehensively as possible. According to the study, since global value chains are so closely intertwined, rising emissions also affect areas that actually have very low direct greenhouse gas emissions, thus making it necessary to give more attention to indirect emissions. Air traffic is another important topic within the European Union. The business options for reducing emissions can be summarised in four points: increase the efficiency of existing processes, switch fuels, use emissions sinks and change internal production processes.

Although the European Union does now have binding guidelines, such as efficiency standards that products have to fulfil, some market-based instruments are still available. Aside from the emissions trading scheme mentioned, this concerns funding schemes for necessary innovations. What we are seeing is that multinational, national and local requirements are on the rise and look very different across the EU. The regulatory mechanism as a whole is constantly changing.

The Schneebergerhof wind farm in Rhineland-Palatinate, Germany, has been online since 1996. Photovoltaic capacity in the form of thin-film solar panels has now also been added.

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BULGARIA

Ruslan Stefanov | Marco Arndt

CLIMATE CHANGE IS RARELY DISCUSSED AMONG THE BULGARIAN PUBLIC

Awareness and acceptance of climate change and its consequences are very limited in Bulgaria. The discussion is mainly confined to small groups. Media reporting on the topic is minimal and rare. Detailed articles only appear in specialist publications. Policy-makers have not engaged in any kind of serious debate about Bulgaria's position on climate change or about how climate policy affects the country.

The two issues related to climate change that Bulgaria's governments have focused on in the past decade were:

1. The role of Europe's carbon prices in rising coal prices. This was used as an argument to justify the construction of a second nuclear power plant. The idea was that nuclear power would keep energy prices down.

2. The possibility of Bulgaria selling more of its emissions rights to cover the deficits in its energy sector. As part of its 2013 fiscal consolidation, the Bulgarian government promised to double the amount of rights it sold.

Outside of these two topics, the debate has been limited to a small, but ever-growing circle of environmental NGOs that are trying to encourage Bulgaria to keep pace with the international debate. These discussions focus on initiatives within EU environmental policy and on the use of EU funding for environmental protection measures.

BULGARIA IS INTERESTED IN JOINING THE INTERNATIONAL DEBATE

Despite the lack of a public debate on climate change, Bulgaria has increased its efforts to develop a relevant policy. This was drawn up within the framework of EU policy. After five years with no political strategy document, the Bulgarian government adopted the third national action plan on climate change in 2012.[1] It states that Bulgaria will achieve the binding EU climate targets by taking active measures worth more than €5 billion between 2013 and 2020. The plan, which was prepared with support from Norway, contains a detailed analysis of the situation in Bulgaria and sets out measures for achieving the climate change targets. However, it is not based on a comprehensive feasibility study, and the measures proposed in the plan were not derived from an evaluation of measures taken previously. This means there is a danger that the planned measures will be hard to implement and thus never make it off the paper. Nevertheless, the document can be interpreted as part of the important learning process that the government and its civil society partners are currently going through.

The Ministry of Environment and Water implements Bulgaria's climate policy in that it takes international positions into consideration in its activities. Strictly speaking, Bulgaria does not have any particular climate policy or position that concerns climate protection that diverges from the position of the European Union; in other words, Bulgaria has always followed EU guidelines so far.

However, opposition did arise against the implementation of more ambitious climate change targets recently. In all likelihood, Bulgaria will side with the coal-intensive member states in eastern Europe when it comes to debates within the European Union and the United Nations. There is little chance of Bulgaria developing its own initiatives. The Bulgarian authorities will probably pursue a wait-and-see strategy.

EUROPEAN CLIMATE POLICY AND GERMANY'S ENERGY TRANSITION ARE LARGELY UNKNOWN

Awareness and knowledge of European energy policy in general and Germany's energy transition in particular are limited. The public debate focuses on the gradual expansion of renewable energy sources and how this will impact electricity prices. The majority of the population and a number of media outlets feel that climate change is being used as an excuse to subsidise foreign companies in the Bulgarian market. These opinions seem to be partially justified, given that Bulgaria has the highest electricity prices in Europe when compared with the population's purchasing power. The situation is exacerbated by the fact that most households use electricity for heating. This direct financial impact has overshadowed the more complex debate on climate change and on European policies

1 | Republic of Bulgaria, 3rd National Action Plan on Climate Change, http://www3.moew.government.bg/files/file/Press/aktualno/2012/mart/NAPCC_20_03_2012.pdf [28 July 2014].

addressing the problem, and has been amplified by populist politicians. The recent decline in Europe's popularity in Bulgaria is probably down to the way these politicians ceaselessly exploit the cost issue.

BULGARIA FAVOURS COAL AND NUCLEAR POWER

In 2012, the last full year for which data are available, Bulgaria produced 47,000 gigawatts of electricity. Almost half of that – 48 percent – was generated in coal-fired power plants, while 33.4 percent came from the country's only nuclear plant, Kozloduy. The rest was produced by gas-fired power plants (5 percent), hydropower (8.4 percent), wind energy (2.6 percent), photovoltaics (1.7 percent) and biomass (0.1 percent). As a consequence of energy consumption falling in the wake of electricity price increases in 2012 and the ongoing economic crisis, Bulgaria's National Statistical Institute reported that renewable energies (including hydropower) had reached a 16.3 percent share in total consumption, which meant the country had more than met its EU 2020 target. After the 20 percent charge on new renewable energies (wind and photovoltaics) was introduced in 2013–14, it is unclear whether Bulgaria will be able to achieve this goal again if electricity consumption starts to rise as the economy recovers.

Overblown forecasts that the country's national electricity distributor produced in the early 2000s assumed a significant increase in electricity consumption. This assumption was based on smaller units of the Kozloduy nuclear plant being shut down early in 2006 under pressure from the European Union and on very favourable economic growth forecasts. Bulgaria therefore decided to build a second nuclear plant in Belene with two (Russian) units. Work on the power plant was commissioned in 2006, after an unfair bidding process that only took producers of Russian technology into consideration. However, the 2008 economic crisis caused electricity consumption to decline, both in Bulgaria and in the rest of the region. As a result, the new nuclear plant started to look less and less attractive. It was also revealed that the project was riddled with mismanagement and corruption. This forced the Bulgarian government to give up its plans for Belene in 2012, resulting in political unrest in the country and the Russian equipment manufacturer bringing a damages claim worth more than €1 billion before the International Court of Arbitration in Paris. A decision is expected sometime in summer 2014.

The coal-fired power plant in Galabovo in the Upper Thracian Plain is part of the Maritsa Iztok Complex, the largest energy complex in Southeast Europe. The lignite comes from the nearby open-cast mining area in the Sakar Mountains.

ELECTRICITY PRICES HAVE BECOME A POLITICAL FOOTBALL

In parallel to the dramatic developments surrounding the Belene plant, another crisis unfolded between 2008 and 2012 and concerned the introduction of renewable energies (wind and photovoltaics). In line with EU regulations, Bulgaria introduced generous feed-in tariffs, which caused an explosion in investor interest. Investment projects for the construction of new systems reached 18 gigawatts by 2011, which led the Bulgarian government to start having serious concerns about the possible consequences of rising energy prices. Although the regulatory authority introduced administrative constraints for new renewable energies in 2011, it did not succeed in influencing the prices. Bulgaria thus had more than a gigawatt of photovoltaic capacity installed in 2012 – which was about three times more than the amount previous governments had planned for 2020. The regulatory authority had increased prices by more than 13 percent in 2012 so that it could, among other things, afford to cover the subsidies for the new renewable energy producers. With purchasing power declining – particularly among the country's poorest people – the price hikes triggered widespread protests in early 2013 that ultimately led the centre-right government to resign. Following the populist reactions of many politicians, Bulgarians made renewable energies the target of their anger about rising prices. This led the new Socialist government to reduce transparency in electricity pricing and remove green energy information from electricity bills. It also introduced a 20 percent grid connection charge for renewable energies in 2013.

Bulgaria's governments have done little to reduce electricity consumption in the country. Unlike households in other European countries, Bulgarian households use more electricity than gas. Part of the reason is that natural gas is so expensive that people cannot afford it, which means they have to heat with electricity, coal or wood. Because Bulgaria depends on Russian imports, it has one of the five highest natural gas prices in Europe. Yet despite the increasing risk to energy security, Bulgaria's politicians are holding on to the status quo in the hope that new economic growth will make people less sensitive to higher electricity prices and create scope for building new and larger production capacities.

FRANCE

Norbert Wagner

Even before the Kyoto Protocol, France had already introduced measures to reduce its greenhouse gas emissions. After signing the protocol and thus agreeing to the commitments it contained, France took new and additional measures to stabilise its 2010 greenhouse gas emissions at their 1990 levels.

With this in mind, the French government enacted a national plan to combat climate change – Plan National de Lutte contre le Changement Climatique (PNLCC) – in 2000. This was replaced with the Plan Climat in 2004, which brought the numerous measures from all sectors of industry together with the aim of stabilising 2010 greenhouse gas emissions at 1990 levels.

France has set itself the long-term goal of reducing emissions to a quarter of their current levels by 2050. To achieve this ambitious target, the country will have to introduce drastic measures and make an enormous effort to implement them.

Its climate policy aims to make France a nation of "excellence environnementale". President François Hollande set out the goals and direction at the country's first environmental conference in September 2012. Within a year, the French government launched an ambitious environmental transition that will sustainably and radically change the way in which French people produce, consume, live and travel in the future. The transition goes far beyond France's national borders, as its goal is to fight global climate change.

The Superphénix nuclear power plant on the Rhône was a fast breeder reactor that was online for just under 13 years. After a series of irregularities, the experiment was shut down in 1998.

At its heart, however, this climate policy approach is mainly about the well-being of the French people, the competitiveness of French companies and the sovereignty of France – today and in the future.

France has always been a pioneer in implementing policies that improve energy efficiency and tackle climate change. The French Agency for Energy Management (Agence Française pour la Maîtrise de l'Energie) was set up as far back as 1982, and legislation was passed in 2001 that officially made the fight against climate change a national priority.

In 2003, France committed to cutting greenhouse gas emissions to a quarter of their 1990 levels by 2050. In doing so, it went above and beyond the commitments it had undertaken in the Kyoto Protocol.

The French government also champions these ambitious goals vis-à-vis its European partners to ensure that the European Union remains at the forefront of the fight against climate change. France's president has therefore suggested that the European Union could set itself the target of reducing greenhouse gas emissions by 40 percent between now and 2030, and by as much as 60 percent by 2040.

The government has taken numerous measures designed to help it achieve these ambitious targets:

- Some 500,000 homes are to undergo energy-saving improvements each year with the aim of cutting energy consumption in the housing sector by 38 percent between now and 2020, while at the same time reducing electricity bills for French households.
- In keeping with the commitments announced by the French president, shale gas extraction has been banned in France since September 2012.
- Fighting global warming also means becoming less dependent on fossil fuels. France has therefore strengthened the development and use of renewable energies, for instance by simplifying the requirements for installing wind turbines.
- An overall goal is to have renewable energies covering 23 percent of consumption by 2020.
- To help it achieve the environmental transition, France is aiming to launch a new plan that will guide future investments by 2016. The idea is to invest €2.3 billion in projects that will specifically promote the switch to renewable energies.

The French government has also started a national debate on energy transition. This debate, which was launched back in 2013, includes representatives of businesses, trade unions and private associations, as well as members of parliament and representatives of territorial collectivities. It is the first such dialogue that France has organised on this topic between different interest groups. The results of the debate will be incorporated into the planned energy transition law, which is supposed to involve a reorganisation of the country's energy mix. The idea is that renewable energies will be given priority in the mix, while nuclear power will see a reduction in its share of energy production.

If France can actually achieve these targets and implement these projects, it could become a model country for climate protection and energy transition.

In light of these principles and self-imposed commitments, the French president proposed hosting the UN Climate Change Conference in France in 2015. The conference must adopt new commitments on reducing greenhouse gas emissions after 2020.

The French government firmly believes that the environmental transition is a common project for the future – one that does not just concern France, but the entire European continent and, indeed, the whole planet. By undertaking its own activities in this area and by hosting the 2015 climate conference, France is seeking to demonstrate its pioneering role once again.

France's debates on climate policy and energy transition are, naturally, being influenced by Germany's decision to phase out nuclear power and by its pursuit of its own energy transition. At first, France's reaction to the nuclear phase-out was mainly one of incomprehension; it couldn't understand why Germany was giving up a safe, affordable form of energy production. France also criticised its neighbour for making the decision without first consulting it, and there was concern that nuclear phase-out across the border could trigger a similar debate in France.

However, the French have been showing increasing interest in the progress of Germany's energy transition for some time now. It could, after all, create scope for closer bilateral cooperation.

Many observers were surprised when, speaking at his New Year press conference, President Hollande not only made the case for closer cooperation between France and Germany on defence matters and tax policy, but also called for an Airbus-style Franco-German company tasked with preparing the energy transition.

"Germany has a head-start in renewables," he said, "but we have our vanguard in energy storage and power grids."

Germany's reaction to the idea was subdued. However, the plan could encourage a Franco-German debate on future climate policy and the energy transition.

GREECE

Susanna Vogt | Maria Kottari | Iakovos Dimitriou

Over the past decade, Greek politicians and media outlets have taken an increasingly systematic and coherent approach to addressing the effects of climate change on the economy and society, while also examining the question of appropriate climate protection.

The Papandreou government (2009–11), with its green development model, acted as an important catalyst for the debate on climate impacts. Two ambitious projects – Shaping the Future and Saving at Home – aimed to use energy-saving improvements to help Greek households reduce their energy consumption (which is unsurpassed in Europe) and thus to cut energy costs for low-paid workers. The founding of the Ministry for the Environment, Energy and Climate Change was also an important milestone for the country. The idea was to facilitate an integrated approach that viewed energy policy, environmental protection and climate change as interwoven problems that would be addressed from a holistic perspective. Climate protection was to become a major component of Greece's energy policy. But ever since the Greek debt crisis hit in 2010, the environment and energy have found themselves among the issues suffering from politicians' lack of ability and capacity to take action – a situation that has arisen because all efforts have been, and still are being, channelled into tackling the crisis.

Along with the relevant minister, Papandreou wanted to link environmental protection to a new growth model that combined reductions in greenhouse gases, sustainable use of resources, job creation and an improved quality of life. This did, at least, get the topic onto the political agenda, even if the debates since then – again a result of the country's debt and economic crises – have mostly concentrated on the issues of energy security and strategic energy policy. A possible partnership with Israel and Cyprus is of great interest to Greece in this regard.

Greece is home to numerous environmental associations and civil society movements that are committed to preserving the country's flora, fauna and marine habitats at the national and local level. The extent and global significance of changes to the climate also inspired a series of studies (WWF Hellas, Bank of Greece, National Observatory of Athens, Institute for Environmental Research and Sustainable Development) that analysed the impacts of climate change on the environment and society. Greek websites dedicated to the topic of energy (www.energia.gr, www.energypress.gr, www.econews.gr) are increasingly focusing on the climate problem in an effort to enrich the public dialogue and make people more aware of climate-related issues. The Hellenic Foundation for European and Foreign Policy collaborated with the European Centre for Environmental Research and Training at Panteion University in Athens and with the Hellenic Society for the Protection of the Environment and Cultural Heritage to launch an initiative entitled Moving On to a Greener Greece 2010–20. Using an open, web-based dialogue between academics, municipal politicians, NGOs and representatives of industry, the initiative aims to generate ideas about how to achieve green growth.[1]

The effects of climate change are already visible in Greece. The anticipated rise in temperatures will make living conditions for many city dwellers even harder than they already are, which in turn will result in consequences for the healthcare system. An increase in the use of air conditioning in buildings in urban and tourist areas could lead to shortfalls and overloading in the electricity grid in the future. This scenario became a reality in August 2013, when an accident at the local power station on Santorini, a popular holiday destination, caused the island to go without electricity for four days. The water supply was directly affected, as the desalination plant had to be shut down. Greece is also plagued by frequent, large-scale forest fires in summer. In combination with declining precipitation and increasingly frequent extreme weather events such as flooding, these fires are a burden on rural regions and reduce the size of harvests. Rising sea levels will also have consequences for the country's sprawling coastline. Many coastal regions could end up flooded, and coastal erosion is also likely to occur. Both phenomena would have a major impact on local livelihoods and on coastal tourism, which accounts for 15 to 18 percent of Greek GDP.

Greece is heavily dependent on imported energy sources, and its large-scale use of fossil fuels is putting the environment at risk. Given the limited natural resources exploited to date, Greece is aware

1 | Initiative "Transition to a Green Greece 2010–2020", http://diavouleusi.eliamep.gr [28 July 2014].

of the great importance of maintaining good relations with its supplier countries – above all Russia – to ensure affordable access to energy resources. At the same time, Greece is trying to exploit its potential as a transit country in order to offset its dependency on imports of fossil fuels. The construction of the Trans Adriatic Pipeline (TAP) means that Greece has the chance to secure for itself one of the main transit routes bringing natural gas from Azerbaijan to European markets. That could make Greece – and the European Union – less dependent on Russian gas. But this situation could change. The recent discovery of large natural gas reserves off the coast of Israel and Cyprus have made the eastern Mediterranean a highly promising region for natural gas extraction, and Greece a key link in the transport route to the EU markets. The potential for gas extraction in the region around Crete and in the Ionian Sea has attracted international interest.

Installed wind capacity in Greece has more than doubled since 2008. A wind farm with 40 turbines, making it the country's largest, went online on Panachaiko Mountain in 2006.

Greece has enacted specific laws and measures within the scope of the EU policy framework and strategy for climate and environmental protection. Law no. 4042 / 2012 (transposing Directive 2008 / 99 / EC) on the protection of the environment through criminal law extends the state's scope for intervention by highlighting and implementing effective measures for protecting the environment and by criminalising actions that damage the environment. Parts of the provisions contained in the law – the legal framework for waste generation and management (transposing Directive 2008 / 98 / EC) – regulate waste management to protect the environment and general health, and simultaneously promote recycling. In addition to introducing extended producer responsibility, Greece has also adopted a national waste management plan. Nevertheless, a great deal of potential for generating energy from well-sorted waste doubtless still remains untapped.

In compliance with the EU's binding rules on achieving the 20-20-20 targets, Greece funds electricity generated from renewable sources (Law no. 4062 / 2012, transposing Directive 2009 / 28 / EC). Greece is rich in opportunities for generating renewable energy from hydro, wind and solar power, and expanding these sectors would be as beneficial to the economy as it would be to society and the environment. At the moment, however, Greece is not making sufficient use of these energy sources and, despite state investment incentives, the renewables sector is currently enjoying enormous popularity among almost exclusively foreign investors. Using renewable energies would benefit the country in numerous ways – such as allowing it to produce clean and carbon-free electricity on its own soil, reducing its dependency on fossil fuels, improving energy security on the Greek islands, decentralising electricity production and raising revenues for municipalities.

Although Greece has managed to increase the share of renewable energies in its energy mix over the past ten years, a variety of obstacles stand in the way of the ongoing development of the sector. Despite significant progress, the investment environment for renewable energies in Greece is still unstable. The tax and legal frameworks continue to be subject to constant change. The solidarity tax on renewable energies (wind and photovoltaics), which Greece recently began applying retroactively, has further damaged the investment climate, while efforts to reduce bureaucratic barriers have been largely unsuccessful.

The ambitious Helios project, which was under discussion for a long time, including with partners in Germany, was set to make Greece the EU's first large-scale exporter of renewable energies. Helios combined elements of energy policy, environmental policy and economics: decarbonisation, the use of national resources, job creation and the participation of private investors in the Greek electricity market. However, these disparate goals, issues of market-compliant energy generation and supply, and technological and financial constraints all hindered the implementation of the project, which was doubtless invested with overly high expectations from the outset.

The Fukushima nuclear disaster of 2011 received extensive coverage in the Greek media, which made environmental destruction and climate change a ubiquitous subject of public debate for a short time. In general, nuclear power is not an issue in Greece, as the country has no nuclear power plant of its own – only a research reactor close to Athens. However, people are aware of the dangers posed by nuclear power. These were made clear in the aftermath of the Chernobyl disaster, which affected Greece. The country is worried about the possibility of an accident at Bulgaria's Kozloduy nuclear power plant or at the facility planned for the Turkish province of Mersin on the southern Mediterranean coast.

At the international level, Greece, as a signatory to the Kyoto Protocol, has already exceeded the binding target under which it had to limit the increase in greenhouse gas emissions in the 2008–12 period to no more than 25 percent above its 1990 levels. In 2010, its emissions had risen by 10.6 percent over the reference levels, putting them within the target. However, this was also a reflection of the downturn in economic activity that came in the wake of the economic crisis, which had begun in the period mentioned. If we look at greenhouse gas emissions per unit of GDP, Greece is right down at the bottom of the European Union (0.61 kilograms of CO_2 equivalent per unit of GDP) – although it has made significant improvements since 1990.

The facts show that Greece has already taken important steps and implemented concrete measures on the road to climate protection. That said, climate change remains a vague concept for the majority of the Greek population. The growing interest in protecting the climate and the environment can mainly be traced back to actors in civil society and the private sector. Greece's energy mix is still heavily dependent on imported fossil fuels, and concerns about security of supply dominate the country's energy policy. The economic crisis is proving a major obstacle to promoting renewable energies and is making it easy to engage in environmentally damaging activities. Examples of this are the widespread use of fireplaces for winter heating in cities, which causes smog, and the state energy corporation's increased use of lignite to generate cheap electricity.

GREAT BRITAIN

Hans-Hartwig Blomeier | Stephan Brandenburger

Much of the southwest coast of the UK was hit by record-breaking floods in late 2013 and early 2014. Unusually long spells of heavy rainfall and storms resulted in the wettest December and January since records began in the UK.[1] In the affected areas – the counties of Cornwall, Devon and Somerset were the worst hit – the bad weather caused massive damage to infrastructure, agriculture and homes.[2]

When the Geneva-based IPCC published its latest report on 31 March 2014, it confirmed concerns, already being expressed in many quarters, that these kinds of storms and rainfall will become an increasingly regular occurrence in the UK in the future. The report's authors say climate change is to blame. The effects of global warming on sea levels mean that the British Isles already have one of the highest risks of flooding in Europe. The study says that by 2080 flooding will affect between 250,000 and 400,000 people in Europe – particularly in the north of the continent.[3] Professor Samuel Fankhauser of the London School of Economics has stressed that the UK and northern Europe must do more to confront the growing threat of coastal and inland flooding.[4] Yet despite the 2008 publication of the Pitt Review, which was commissioned by Gordon Brown's government in response to the shortcomings in civil protection during the devastating floods of 2007, the most recent floods led to renewed criticism of disaster management, this time under David Cameron's government, and of the delay in disaster response.[5]

As part of necessary fiscal consolidation measures, the British government had cut funding for flood defences by five percent every year since 2010. One result of this was that rivers and streams that could have assimilated the extra water were no longer dredged.[6] The prime minister, however, felt that his actions were reasonable. He argued that the government had done everything it could to help people from the outset, saying that it had brought in more pumps when they were needed, made more money available and deployed troops.[7]

In any case, the latest floods have brought the issue of climate change back into the focus of policy discussions in the UK. The Conservatives, Labour and the Liberal Democrats now agree that government programmes are needed to tackle the effects of climate change. They also agree that national efforts alone will not be enough to achieve lasting success, and that international climate deals are needed. When he took office in May 2010, Prime Minister David Cameron announced that his new cabinet would be "the greenest government ever".

Despite cross-party unity on support for renewable energies, the priorities regarding on and offshore wind turbines appear to differ. Since April this year, David Cameron and Chancellor George Osborne have been pushing for a moratorium on onshore wind turbines – a position that has sparked much controversy. There is speculation that this is just a tactical move on Cameron's part, designed to placate, in time for the 2015 general election, those in his own party who are critical of his climate policies.[8] Leading politicians from the Liberal Democrats, the Conservatives' coalition partner, have already indicated that they will not support the moratorium should they form another coalition government in 2015. The UK currently has around 4,000 onshore wind turbines that produce five percent of its electricity. A further 3,000 have been granted

1 | Met Office, Centre for Ecology & Hydrology, "The Recent Storms and Floods in the UK", 02/2014, http://metoffice.gov.uk/media/pdf/1/2/Recent_Storms_Briefing_Final_SLR_20140211.pdf [28 July 2014].

2 | "Schwere Stürme in Großbritannien und Frankreich" (Hefty storms in the UK and France), *Die Welt,* 8 February 2014, http://welt.de/article124659002.html [28 July 2014].

3 | IPCC, "Summary for policymakers", in: C. B. Field et al., *Climate Change 2014: Impacts, Adaptation, and Vulnerability,* 2014, http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf [28 July 2014].

4 | The London School of Economics and Political Science, Grantham Research Institute on Climate Change and the Environment, http://lse.ac.uk/GranthamInstitute [28 July 2014].

5 | Jochen Buchsteiner, "Hochwasser macht Politik" (Floods a political issue), *Frankfurter Allgemeine Zeitung,* 11 February 2014, http://faz.net/-gup-7m9wc [28 July 2014].

6 | Oliver Bennett, "Flood defence spending in England", Standard Note SN/SC/5755, 12 February 2014, http://www.parliament.uk/briefing-papers/sn05755.pdf [28 July 2014].

7 | Jens-Peter Marquardt, "Die EU soll schuld sein an der Flut" (EU blamed for floods), *Tagesschau,* 11 February 2014, http://tagesschau.de/ausland/flut-briten100.html [28 July 2014].

8 | Rowena Mason, "Tories plan new attack on windfarms", *The Guardian,* 1 April 2014, http://gu.com/p/3z4aj [28 July 2014].

planning permission. According to a survey quoted by *The Guardian*[9], most people in Britain support funding for renewable energies. Maf Smith from the association Renewable UK was therefore disappointed by Cameron's proposals. He said that onshore wind turbines are significantly cheaper and more reliable than offshore turbines, not to mention nuclear power plants, and must therefore continue to receive support. Smith also pointed out that talk of a moratorium was causing uncertainty among potential investors.[10]

Nevertheless, the UK is home to the world's largest offshore wind farm: the London Array in the Thames Estuary. The UK also accounts for about 55 percent of Europe's offshore wind energy, making it the biggest producer in Europe.[11] Despite this, rising electricity and gas prices are causing widespread dissatisfaction among the British public. The situation is said to be caused by the UK's six largest energy suppliers (known as the Big Six): British Gas, EDF Energy, E.ON UK, npower, Scottish Power and SSE. Most people in Britain think that the companies do not act in the interests of consumers and deliberately keep prices high. In light of this, Labour leader Ed Miliband has announced that he would freeze electricity prices if elected in 2015. The current government has firmly rejected this proposal, describing it as dubious and almost impossible to legally enforce.[12]

During Chancellor Angela Merkel's visit to London in February this year, it became clear that Germany and the UK are both pursuing similar climate goals. Merkel is in favour of the European Union reducing carbon emissions by 40 percent by 2030, while Cameron is seeking 50 percent within the framework of a UN agreement.[13]

This proposal is based on a study that the UK's environment ministry published in early 2014, which showed that the target could be achieved by investing just 0.59 percent of GDP and that it would also benefit the country's economy.

A decline in demand for fossil fuels from abroad could save up to €110 billion across the European Union.[14]

The Economist has spent the past two years observing the energy transition that Germany's federal government has been vigorously pursuing since the Fukushima disaster of March 2011. Germany's aim of reducing its greenhouse gas emissions by 80 percent compared to 1990 levels by 2050 – and that without any help from nuclear – has received mixed reactions in the UK. On the one hand, there is admiration for the ambitious project, but on the other, there is an expectation that the country's competitiveness will suffer badly at the hands of these radical changes.[15]

The Economist points to the complex challenges of storage and transport that will need to be overcome to realise the ambitious plan and says that in-fighting between the different political camps and jurisdictions is jeopardising the transition's chances of success.[16]

Writing in a 2013 Oxford Energy Comment, Professor John Rhys levelled very clear criticism at Germany's 2011 decision to phase out nuclear power. Germany, says Rhys, has the safest and most modern nuclear power plants in the world. Yet in the wake of the Fukushima disaster it decided to turn its back on a reliable, climate-friendly source of energy in a move that was, unlike the UK's, not based on factual evidence. Rhys points out that this has made Germany more reliant on coal than ever – which goes against its own aspirations and the EU climate targets.[17] Furthermore, Germany is also reliant on Russian gas. Given the current crisis in Ukraine, this constellation could prove especially volatile.

The UK is charting a very different course on nuclear policy than Germany. In March last year, the energy minister Ed Davey approved the construction of a new nuclear power plant in Somerset in the south of the

9 | Ibid.
10 | Ibid.
11 | Matthias Thibaut, "London nimmt Klimaziele zurück" (London goes back on climate targets), *Der Tagesspiegel,* 5 June 2012, http://tagesspiegel.de/politik/6710112.html [28 July 2014].
12 | Guy Chazan and Jim Pickard, "Political uncertainty becalms wind plans", *The Financial Times,* 7 April 2014.
13 | Sophie Yeo, "Merkel: UK and Germany have 'common ground' on climate strategy", Responding to Climate Change (RTCC), 28 February 2014, http://rtcc.org/2014/02/28/merkel-uk-and-germany-have-common-ground-on-climate-strategy [28 July 2014].
14 | Department of Energy & Climate Change, *Policy summary of UK analysis on EU 2030 targets,* 27 February 2014, https://gov.uk/government/uploads/system/uploads/attachment_data/file/285533/policy_summary_uk_analysis_eu_2030_targets.pdf [28 July 2014].
15 | "Germany's energy transformation. Energiewende", *The Economist,* 28 July 2012, http://economist.com/node/21559667 [28 July 2014].
16 | "Germany's energy reform. Troubled turn", *The Economist,* 7 February 2013, http://economist.com/news/europe/21571440-germanys-national-energy-project-becoming-cause-disunion-troubled-turn [28 July 2014].
17 | John Rhys, "Current German Energy Policy – the Energiewende: A UK and climate change perspective", http://oxfordenergy.org/wpcms/wp-content/uploads/2013/04/Current-German-Energy-Policy-A-UK-and-climate-concern-perspective.pdf [28 July 2014].

country. It should produce seven percent of the UK's electricity when it goes into operation in about ten years' time.[18]

In his speech on Europe on 23 January 2013, Prime Minister Cameron said that, if he had his way, climate and environmental policy would be an area of national rather than EU competence. This, he explained, would allow the UK to achieve a better balance between economic competitiveness and the measures necessary to protect the climate and the environment. The Regent's Report 2013 states that the UK reduced its carbon emissions by around 23.5 percent between 1990 and 2010, which puts it just ahead of Germany (21.7 percent) and far ahead of France (8.6 percent) and Italy (8.2 percent).[19]

Since 2012, the UK government has been trying to encourage households to become more energy efficient on the back of its Green Deal. This is a large-scale incentive programme that aims to get 14 million homeowners to carry out various measures, such as installing wall insulation, modern windows and efficient heating systems, by 2020. Homeowners do not pay up front for the renovations. Retailers and energy suppliers cover the costs to start with, and the customers pay them back through their monthly electricity bills. The monthly repayments must not exceed the savings achieved by the upgrades.[20]

So the UK has, without doubt, made progress on energy and the climate since David Cameron's government came to power in May 2010. However, proposals like the planned moratorium on onshore wind turbines seem to be inconsistent with the general direction.

The UK accounts for about 55 percent of Europe's offshore wind capacity. The London Array in the Thames Estuary is the world's largest offshore wind farm.

18 | "Großbritannien will neues Kernkraftwerk bauen" (UK plans new power station), *Frankfurter Allgemeine Zeitung*, 19 March 2013, http://faz.net/-h00-77sbk [28 July 2014].

19 | John Drew and Martyn Bond (eds.), *The UK & Europe: Costs, Benefits, Options. The Regent's Report 2013,* Regent's University London, http://regents.ac.uk/files/regentsreport2013.pdf [28 July 2014].

20 | "Ein Green Deal setzt in Großbritannien ganz neue Anreize" (Green deal sets completely new incentives in the UK), FAZjob.NET, *Frankfurter Allgemeine Zeitung*, http://fazjob.net/ratgeber-und-service/beruf-und-chance/umwelttechnik/120641.html [28 July 2014].

ITALY

Katja Christina Plate | Silvia Bruno | Irene Fornari

HOW CLIMATE CHANGE IS PERCEIVED AMONG ITALY'S PUBLIC, ITS MEDIA OUTLETS AND ITS POLITICIANS

Italy is a successful participant of the European Climate Research Alliance (ECRA)[1] and of Climate Change and Impact Research: the Mediterranean Environment (CIRCE)[2]. The country has specialised research centres[3] and university research projects[4] that are investigating climate change and its impacts. The academic institutions provide, at the level of global cutting-edge research, models and analyses of how climate change will affect Italy and other countries.

The country also has numerous Italian-language websites – run by European institutions, the Italian government and NGOs – that provide the general public with easy-to-understand information on the topic. One example is the website of the Agenzia europea per l'ambiente (AEA),[5] which provides information on climate adaptation measures on behalf of the European Commission. Another is the website of Italy's environment ministry, which offers basic information on the topic and links to all international agreements that address climate protection.[6] Civil society actors, such as Legambiente,[7] WWF Italia,

Drilling field in Libya belonging to Italy's natural gas corporation ENI.

Greenpeace Italia[8] and Slowfood,[9] are also channelling their energies into addressing climate change. Furthermore, numerous Italian-language blogs address the topic on an ongoing basis. They include "Veronica Clima"[10] the "Kyoto Club",[11] and one written by Carlo Carraro, director of the International Center for Climate Governance (ICCG).[12]

The Italian media – both public and private – regularly broadcast television reports on climate change and its impacts. However, Italian media experts complain that radio and television news programmes in particular give too little airtime to the topics because the issues surrounding energy security, supplier diversification, and energy pricing are highly politicised. They say that political allegiances in the media landscape can, at times, distort the way news is reported.

Overall, high-quality Italian-language information on climate change is available and very easy to access. That said, climate change has been treated as a somewhat secondary issue by both the Italian public and policy makers in recent years. A serious economic crisis and efforts to return to economic growth inter-

1 | "Collaborative Programmes", European Climate Research Alliance (ECRA), http://ecra-climate.eu/index.php/collaborative-programmes [28 July 2014].
2 | "Italy", CIRCE Integrated Project – Climate Change and Impact Research: the Mediterranean Environment, http://www.circeproject.eu/index.php?option=com_content&task=view&id=52&Itemid=1 [28 July 2014].
3 | E.g. the Euro-Mediterranean Center on Climate Change, the Società italiana per le scienze del clima, the Istituto nazionale di geofisica e vulcanologia, the Agenzia nazionale per le nuove tecnologie e lo sviluppo economico sostenibile, the Institute of Atmospheric Sciences and Climate and the Istituto di Biometereologia.
4 | E.g. CETEMPS of the University of Aquila, Global Observation Research Initiative in Alpine Environments, in which the Italian universities of Molise, Pavia and Parma participated, EuroCold on climate change of the Università di Milano-Bicocca and Eco-Morphodynamics of Tidal Environments and Climate Change of the University of Padova.
5 | European Commission and European Environment Agency (EEA), European Climate Adaption Platform, http://climate-adapt.eea.europa.eu [28 July 2014].
6 | Ministero dell'Ambiente e della Tutela del Territorio e del Mare, "Clima", 19 December 2013, http://www.minambiente.it/pagina/clima [28 July 2014].
7 | Legambiente, "Clima", http://legambiente.it/temi/clima [28 July 2014].
8 | Greenpeace Italia, "Salviamo il clima", http://greenpeace.org/italy/it/campagne/Salviamo-il-clima [28 July 2014].
9 | Slowfood, "Cambiamento climatico. Un'agricoltura più sostenibile", http://slowfood.it/sloweurope/ita/83/cambiamento-climatico [28 July 2014].
10 | Veronica Caciagli, http://veronicaclima.it [28 July 2014].
11 | Kyoto Club, http://kyotoclub.org [28 July 2014].
12 | Carlo Carraro, http://carlocarraro.org [28 July 2014].

fered with public and political debates on climate change and, by extension, on protecting the environment.

Although various parties in Italy address issues related to climate protection – and the environment in general – it mostly tends to be those from the left side of the political spectrum and at a local rather than national level. Examples of this can be found in the regions of Campania, Lazio and Sicily, where serious health problems caused by illegal rubbish dumps ultimately led to a greater public awareness of environmental issues. In addition to a wing of the Partito Democratico (Democratic Party), the Movimento 5 Stelle (Five Star Movement) and various smaller parties such as Sinistra, Ecologia, Libertà, Green Italia – Verdi Europei, and Ecologisti Democratici are all addressing issues connected to protecting the environment. Several cross-party initiatives exist, including Futuro Sostenibile.[13] In general, however, it is clear that the centre-right section of Italy's political spectrum has yet to find a convincing way to approach the topic.

CLIMATE CHANGE, NATIONAL AND INTERNATIONAL POLICIES ON ENERGY AND ENERGY SECURITY

While climate protection plays a leading role at the environment ministry (Ministero dell'Ambiente e della Tutela del Territorio e del Mare), traditional energy policy is assigned to the economic development ministry (Ministero dello Sviluppo Economico). Italy's foreign ministry (Ministero degli Affari Esteri), meanwhile, is responsible for issues related to external energy policy and the EU's internal energy market. Coordination clearly does not get any easier when the ministers from the various ministries belong to different parties or are independent – as is currently the case in the government under Prime Minister Matteo Renzi.

The ministry for economic development, while still working under the previous government led by Enrico Letta, published a new national energy strategy in March 2013.[14] With regard to the environmental impact of energy use, Italy aims to exceed its 20-20-20 targets[15] and assume a leading role in decarbonisation efforts within Europe's Energy Roadmap 2050. However, concerns about Italian competitiveness and economic growth dominate the energy strategy, which sets out the goal of bringing the energy prices paid by consumers and businesses more into line with overall European price levels. In 2014, industrial companies in Italy paid €0.1122 per kilowatt-hour, while those in Germany paid €0.0860 and the European average stood at €0.0940.[16] The high electricity prices place Italy's energy-intensive branches of industry, as well as the small and medium-sized enterprises that form the backbone of the Italian economy, at a significant competitive disadvantage vis-à-vis Germany and other European rivals.

Italy does not produce any of its electricity from nuclear energy. Berlusconi's government put forward a plan to phase nuclear power back in, but the proposal was rejected by 95 percent of voters in a referendum held in June 2011. Italy has underground gas reserves (estimated at 223 billion cubic metres) and petroleum reserves (estimated at 100 million tonnes). Yet despite this, Italy imports 90.2 percent of its natural gas, 90.2 percent of its petroleum and 96.1 percent of its solid fuels.[17] Italy's energy mix is made up of around 39 percent petroleum, 38 percent natural gas, about 10 percent solid fuels and roughly 13 percent renewable energies.[18] The petroleum that Italy imports comes from Libya (roughly 20 percent) and Azerbaijan, Russia and Saudi Arabia (about 15 percent each). It gets about 33 percent of its natural gas from Algeria, roughly 28 percent from Russia and 9 percent from Qatar. Italy is extremely dependent on imports for its energy supply.

Given Italy's heavy dependence on energy imports, a stabilisation of the current conflicts in the Mediterranean region is of vital interest to its foreign and security policy. The line it is taking involves supporting democracy in the Mediterranean region where it can and focusing on stability where it must. What is more, Silvio Berlusconi, Italy's former, long-serving

13 | Centro per un Futuro Sostenibile, "La fondazione. Centro Futuro Sostenibile", http://futurosostenibile.org/fondazione-centro-futuro-sostenibile [28 July 2014].

14 | Ministero dello Sviluppo Economico, *Italy's National Energy Strategy: For a more competitive and sustainable energy*, 03/2013, http://www.encharter.org/fileadmin/user_upload/Energy_policies_and_legislation/Italy_2013_National_Energy_Strategy_ENG.pdf [28 July 2014].

15 | The targets in detail: a 21 percent cut in emissions, 19-20 percent share of renewables in gross final energy consumption, 24 percent more energy efficiency), cf. n. 14, p. 6.

16 | European Commission, Eurostat, http://epp.eurostat.ec.europa.eu [28 July 2014].

17 | European Commission, *EU energy in figures. Statistical Pocketbook 2013,* 2013, http://ec.europa.eu/energy/publications/doc/2013_pocketbook.pdf [28 July 2014].

18 | Unione Petrolifera, *Data Book 2014. Energie e Petrolio*, http://www.unionepetrolifera.it/it/CMS/pubblicazioni/get/2014/Data%20Book%202014.pdf [28 July 2014].

prime minister, maintained private friendships with both Libyan ruler Muammar al-Gaddafi and Russian President Vladimir Putin. Political analysts say these relationships blocked any deliberations on diversifying Italy's energy mix.

Proposals designed to strengthen renewable energies – comparable to Germany's energy transition – are also said to have it hard in Italy, as the national energy corporations ENI and ENEL have a strong lobby in parliament. When the German government decided to phase out nuclear energy in spring 2011, Italy was surprised at the speed with which the agreement was reached and implemented. Italy feels that the kick-start to Germany's renewable energies sector has been successful. However, it is also aware of the high costs to private consumers and takes a critical view of this – particularly in light of the difficult economic situation that Italy's households and industry are currently experiencing.

Experts continue to see a great deal of potential in the field of renewable energies in Italy. Although the country leads the way in geothermal energy and has largely exhausted its hydropower potential, there is considerable room for development in the photovoltaic and wind energy sectors. In light of the high energy costs that companies and private households have to cover, energy efficiency is an extremely interesting area. Energy-saving improvements and modernisation work to buildings, and energy production using biomass, biogas and biofuels, are all growth segments in this regard. Renzi's government has announced plans to increase support for developments in this direction.

ITALY'S EUROPEAN AND MULTILATERAL CLIMATE AND ENERGY POLICIES

Within the scope of its 2013 national climate strategy, Italy has committed to achieving Europe's climate and energy goals (20-20-20 targets, Roadmap 2050). As part of the 2030 climate and energy goals, which were negotiated in March 2014, Italy's environment minister has agreed to lowering greenhouse gas emissions by 40 percent compared to 1990 levels by 2030. The Italian government also supported a separate paper, drawn up jointly with Germany, France, Denmark, Portugal, Belgium, Austria and Ireland, on an independent EU target for expanding renewable energies as part of the 2030 climate and energy framework.[19] The whole of Europe is now aiming to increase the share of renewable energies to at least 27 percent of energy consumption. Italy is also supporting climate protection goals at the multilateral level in a manner consistent with Europe's position. It is ratifying relevant agreements and making efforts to implement them. However, Italy has not yet adopted a high-profile position or leading role in the international climate debate, choosing instead to follow the lead of other EU countries.

In terms of achieving the European climate targets, Italy currently has a very specific problem to tackle. In 2012, it transferred most of the competences for energy to the regions, which are struggling to handle the responsibilities. Renzi's government has announced plans to change the way the Italian constitution defines federalism, partly as a way of solving this problem. Without constitutional reform, it will be impossible to implement strategic projects that have pan-European importance in terms of energy diversification and security – such as the docking of the Trans Adriatic Pipeline (TAP) in Puglia. Italy therefore also supports a governance system for coordinating energy policies at the European level. If constitutional reform fails, this would give Renzi's government another opportunity to enforce measures that are viewed critically by the regions, such as the TAP terminal, energy grids and gas pipelines.

As part of its presidency of the Council of the European Union in the second half of 2014, Italy wants to focus and make real progress on a unified energy and climate policy for Europe. Climate policy will also play a role at the Expo 2015 in Milan, as the theme of the event is water and food. So, for the next year at least, climate policy will play a bigger role in Italy than it has in the past. It would be wonderful if the momentum continued even after the presidency and the Expo.

19 | German Federal Ministry for Economic Affairs and Energy, "European Energy Policy" (European energy policy), http://bmwi.de/EN/Topics/Energy/European-and-International-Energy-Policy/european-energy-policy.html [17 November 2014].

KOSOVO

Artan Zeka | Granit Ternava | Anja Czymmeck

Climate change is at the very bottom of the list of priorities for politicians and the public in Kosovo. This can be explained by the fact that the country was caught up in a brutal war 15 years ago and only declared its independence six years ago. The country is still grappling with numerous problems related to the transition, so issues such as climate change, energy supply and security, and environmental protection are not yet attracting the necessary attention. The political agenda has other priorities, such as gaining international recognition for the country, developing the rule of law and dealing with economic problems – in particular tackling unemployment, which is extremely high, and fighting corruption and crime.

Kosovo lacks a public awareness of, and sufficient information on, the ways in which climate change will impact people. Yet the country is very much affected by climate change, as two of its most important economic sectors, agriculture and forestry, are climate dependent.

In 2012, the UNDP compiled an inventory of the effects of greenhouse gases in Kosovo and found that most emissions come from the energy industry (electricity supply, mainly from coal-fired power plants), which produces roughly 82 percent of the country's total greenhouse gas emissions (10,507.2 million tonnes of CO_2 eq.), mainly through burning fossil fuels like lignite and wood.[1]

Kosovo is making efforts to address these problems. At the moment, this involves producing overviews of the situation and drawing up strategies. The Kosovo Environment Protection Agency, which was set up by the Ministry of Environment and Spatial Planning, produces a report on Kosovo's environmental situation every two years. The last report on monitoring air quality in Kosovo in the 2010–2012 period was prepared and published by the Kosovo Environment Protection Agency in collaboration with the Hydrometeorological Institute of Kosovo, the Kosovo Energy Corporation and Ferronikeli, Kosovo's leading metal processing company. Parameters measured for 2012

A lignite-fired power plant near Obilić. Kosovo wants renewable energies to cover 26 percent of its energy needs by 2020. At the moment they account for less than 3 percent.

(dust, SO_2, NOx and CO_2) showed that the country as a whole was not substantially exceeding the acceptable, prescribed levels. However, in highly industrialised areas, such as Elez Han (home to the country's largest cement processing plant) and Gjilan (home to numerous quarries), the parameter readings were far in excess of acceptable levels and were described as posing a threat to the health of the local population.[2] Despite knowledge of what harmful emissions mean for the public, no far-reaching measures (e.g. introducing low-emission, low-pollution vehicles to the public transport network) have been taken to improve the situation so far.

In the past, the European Commission's annual progress reports for Kosovo invariably criticised its lack of national climate strategy. One of the main reasons for the delay in developing such a strategy was the high cost of implementation, which was estimated at €300 million. At the end of 2013, however, Kosovo finally presented a climate strategy, entitled National and International Challenges of Climate Change, albeit without a plan of how it was going to cover the costs of implementation.[3] Among other things, the strategy

1 | USAID, *Kosovë: 2014–2018. Strategjia për Bashkëpunim për Zhvillimin e Vendit* (Kosovo: 2014–2018. National Development Cooperation Strategy), Priština, p. 8, http://usaid.gov/sites/default/files/documents/1863/CDCS_Kosovo_2014_ALB.pdf [28 July 2014].

2 | Kosovo Environmental Protection Agency, *Raport për gjendjen e Mjedisit 2011–2012* (Staatlicher Umweltbericht 2011–2012), p. 11, Priština, 2013, http://ammk-rks.net/repository/docs/Raporti_Gjendja_e_Mjedisit_Web_Shqip.pdf [28 July 2014].

3 | Cf. KosovaLive Media Group, "Prezantohet strategjia për ndryshimet klimatike në Kosovë" (Presentation of Kosovo's climate strategy), http://kosovalive360.com/prezantohet-strategjia-per-ndryshimet-klimatike-ne-kosove.html [15 May 2014].

shows that Kosovo does not yet have a database of greenhouse gas emissions, and that it does not know when it will start evaluating emissions.

The strategy[4] sets out the following priorities: finalise the laws on environmental protection in line with EU law; gradually fulfil EU standards; effectively implement and integrate the legislation in all sectors; use natural resources efficiently; develop long-term education programmes, campaigns and projects to raise public awareness; support concepts for producing clean energy; and apply the principle of energy efficiency in all sectors of energy use. The document represents a turning point in Kosovo's policies relating to European directives because it addresses the commitments that the country needs to undertake if it is to meet EU standards on climate protection.

This is especially important given that, while Kosovo's industry is relatively underdeveloped and does not produce many carbon emissions, its energy sector still relies primarily on coal.[5] Using coal to generate energy goes against European guidelines and targets for environmentally friendly energy production. In light of this, Kosovo's government has made increasing energy efficiency measures and incentives for using alternative and renewable energy sources part of its energy strategy for the 2009–18 period. This has led to the first tentative forays into wind and solar technologies. There appears to be a growing awareness that a legal framework – made up of tax breaks, for instance, for the purchase of new systems or for feeding unused electricity into the grid – will be needed to make these types of energy attractive to investors.[6] Kosovo is aiming to have renewable energies such as wind, hydro and solar covering 26 percent of its energy needs by 2020. At the moment they account for less than 3 percent.

Overall, we can say that Kosovo now has relevant strategies and laws in place but that it is still lacking in an active approach to a public debate on energy policy. A number of international organisations in Kosovo actively collaborate with state institutions and policy makers to stimulate political discussion, research and motivation for the topic. The most important activities in this area are the UNDP's programme on energy efficiency, the GIZ programmes on efficiency and renewable resources, and investments from KfW Development Bank.

Kosovo is not currently part of the UN Framework Convention on Climate Change and has not signed the Kyoto Protocol. It has, however, committed to aligning its legislation with EU law. To do this, Kosovo's policy makers will have to take important steps with regard to energy market regulations so that, for instance, they comply with standards on calculating and paying for energy.[7] The EU's progress report regularly warns that only a small share of the energy generated in Kosovo is actually paid for. The same applies to environmental protection. While Kosovo does have the necessary state institutions (e.g. an environment ministry and an agency for environmental protection), it will have to work harder on producing appropriate legislation if it is to comply with the provisions of the Stabilisation and Association Agreement. Above all, the country's decision makers and political elite must recognise the need for helping Kosovo make progress in environmental protection. They must also raise public awareness of why, in terms of health and quality of life, it is important to become more active in this area. And they must make it clear that, rather than standing in the way of economic progress, protecting the environment can actually benefit it.

4 | Republic of Kosovo, Ministry of Environment and Spatial Planning, *Strategjia Kornizë për Ndryshimet Klimatike për Kosovën* (Climate Change Framework Strategy for Kosovo, Climate protection directives), Priština, 2013, p. 21, http://mmph-rks.org/repository/docs/Strategjia_Kornizë_për_Ndryshime_Klimatike_për_Kosovë_19022014_FINAL_81170.pdf [28 July 2014].

5 | Energjia.al, "19 miliardë tonë thëngjill në Kosovë" (19 billion tonnes of coal in Kosovo), *Gazeta Zeri*, 7 October 2010, http://energjia.al/2010/10/07/19-miliarde-tone-thengjill-ne-kosove [28 July 2014].

6 | Republic of Kosovo, Ministry of Energy and Mining, *Strategjia e Energjisë e Republikës së Kosovës 2009–2018* (Energy Strategy of the Republic of Kosovo from 2009–2018), Priština, 2009, pp. 76–78, http://mzhe.rks-gov.net/repository/docs/STRATEGJIA_E_ENERGJISE_E_REPUBLIKES_SE_KOSOVES_2009-2018.pdf [28 July 2014].

7 | Republic of Kosovo, Ministry of Economic Development, "Beqaj: Concrete projects for the energy sector", 6 September 2012, http://mzhe.rks-gov.net/?page=2,42,539 [28 July 2014].

CROATIA

Michael A. Lange | Anita Marković

CLIMATE TRENDS AND RISKS IN CROATIA

Meteorological data has been collected in Croatia since the 19th century, so it can draw on reliable data concerning long-term climatic trends.[1] The most significant climate trends in Croatia can be summarised as follows:[2]

- Croatia has seen an increase in average temperatures primarily in the last 20 years. This increase in the mean annual air temperature has varied across the country in the last 10 years from 0.02 °C (Gospić) to 0.07 °C (Zagreb). In the continental part of Croatia these temperature increases apply mainly to the winter months, while along the Adriatic coast the increases are primarily in summer.
- Annual rainfall has decreased, a trend that manifests itself in an increase in the amount of days with no rainfall. The frequency of dry periods, that is, the number of consecutive dry days, also increased.
- Croatia's main risk from climate change is somewhat surprisingly flooding.[3] Due to the fact that Croatia is situated within the Danube drainage basin and is heavily affected by two tributaries of the Danube, the Sava and the Drava, the country is potentially flood-prone and it is estimated – with the exception of coastal areas – that 15 percent of Croatian territory faces the threat of flooding.
- Further risks that can be attributed to climate change include potentially rising sea levels, extreme temperatures and rainfall, droughts and an intensification of winds.

Flat, low-lying islands and river deltas appear to be particularly at risk and are especially prone to flooding. As the Croatian coast is a tectonically active region, it is difficult to predict the concrete effects that rising sea levels may potentially have.

The combination of increasing temperatures and decreasing rainfall naturally brings with it an increased risk of drought, especially during extended periods of high temperatures. Seven of Zagreb's and six of Gospić's ten warmest years since the beginning of the 20th century have occurred since 2000.[4] Records show that 2003 was also Croatia's hottest year since 1862.[5]

As far as wind is concerned, the bora and the sirocco are the two most dominant wind phenomena along Croatia's Adriatic coast. While the bora triggers significant drops in temperature, the sirocco is characterised by strong gusts all along the Croatian coast. To what extent these wind phenomena are changing as a result of climate change is as yet unknown.[6]

CLIMATE CHANGE'S IMPACT ON ECONOMIC SECTORS

Significant segments of Croatian society and particularly the economy will be affected in the future by the progression of climate change. Almost a quarter of the Croatian economy is based in sectors that would potentially be affected by climate change and the possible occurrence of extreme weather, which could lead to losses of nearly €1 billion annually.

The weather-dependent Croatian agriculture sector is especially at risk from any potential adverse changes to climatic conditions. Temperature and rainfall have an impact on agricultural production. In 2001, 92 percent of Croatian territory was described as "rural", and 48 percent of the Croatian population lived in these rural areas.[7] Due to its bearing on the country's food security, and especially because of the additional jobs it creates, Croatian agriculture is of major importance. Because of extreme weather phenomena, such as floods, hailstorms and periods of drought with serious water shortages, Croatia recorded average crop and income losses between 2000 and 2007 to the tune of €176 million per year, and the magnitude of the crop damages and income losses could increase in the future.[8]

1 | Cf. Zavisa Simac and Ksenija Vitale, "Climate Vulnerability Assessment. Republic of Croatia", Republic of Croatia, Zagreb, 05/2012, http://seeclimateforum.org/upload/document/cva_croatia_-_english_final_print2.pdf [28 July 2014].
2 | Cf. Republic of Croatia, Ministry of Environmental Protection, Physical Planning and Construction, "Physical Planning and Construction 2010".
3 | Cf. Simac and Vitale, n. 1.
4 | Cf. n. 2.
5 | Cf. Simac and Vitale, n. 1.
6 | Ibid., p. 20.
7 | UNDP, *Human Development Report. Croatia 2008. Climate change and its impacts on society and economy in Croatia*, Executive summary at: http://klima.hr/razno/news/NHDRsummary.pdf [28 July 2014].
8 | Ibid., p. 129.

Agricultural fields outside the city of Metković. Floods, hailstorms and droughts resulted in average crop losses worth €176 million per year from 2000 to 2007.

The Croatian wine-growing sector benefited from a trend of warmer winters and springs in that they produced better harvests and were able to cultivate new varieties of grapes.

The tourism sector is now responsible for around 20 percent of Croatia's GDP and provides 30 percent of the country's jobs.[9] Due to an expected temperature increase along Croatia's Adriatic coast, which is the country's most popular tourist destination during summer, the number of tourists who currently travel to these destinations may start to decrease, as they favour cooler regions. A significant part of the tourism infrastructure along the Adriatic coast is threatened by coastal flooding if the sea level continues to rise as expected.[10] Both developments could have serious consequences for the many local authorities and for the Croatian economy as a whole.

A long-term increase in temperature would also impact on Croatia's ecosystem and its species composition. Plagues of mosquitoes and a prolific growth of algae may also adversely influence tourism. Climate change may affect public health as well.

Heatwaves have caused serious discomfort primarily for older and chronically ill people in recent years.

Croatia's energy consumption is also constantly on the rise,[11] but not even its energy sector is spared by climate change, as the operation of power plants is also influenced by the water and temperature problems the country now faces (cooling water).

Croatia has significantly increased its electricity production from renewable sources in recent years. Although this is a very positive trend from an ecological point of view, there are increasing concerns from a climate change perspective that it will affect the consumption of water – which, for instance, generated more than 60 percent of the entire national electricity production in 2010.[12]

A possible increase in the number of sunny days offers the opportunity to maximise the utilisation of solar energy. However, the temperature increase triggered by an increase in sunny days would lead to an increased demand for cooling energy.[13]

Fortunately, Croatia has large freshwater resources. This water is largely used for drinking water and for agricultural purposes.

Water is therefore not considered to be a scarce resource in Croatia. Despite there being no lack of water, the agricultural sector does face the risk of temporary water shortages – primarily during critical times for farming or in times of reduced electricity production in Croatia as a result of a reduced flow of water from Croatian rivers. The existing knowledge on the possible effects of climate change on Croatia's freshwater resources is not yet extensive enough to provide concrete figures regarding the damaging impact it will have on biodiversity. Nor is it sufficient to provide an accurate assessment of the implications of climate change with regard to salts infiltrating wetland areas and inland waters.[14] Climate change will

9 | Ibid.
10 | Cf. Simac and Vitale, n. 1.

11 | Cf. Eike Dreblow et al., *Assessment of climate change policies in the context of the European Semester. Country report: Croatia*, 2013, http://ec.europa.eu/clima/policies/g-gas/progress/docs/hr_2013_en.pdf [28 July 2014].
12 | Cf. Simac and Vitale, n. 1.
13 | Cf. n. 7.
14 | Cf. Krešo Pandžić, "Report on National Experience in Dealing with Climate Variability and Change Issues"; Republic of Croatia, "Air Protection Act. Official Gazette #130/11", Zagreb, 2011.

also affect Croatia's fishing and shipbuilding industries. There are still great uncertainties about the degree to which the sea level is set to rise in the Adriatic, but such an occurrence could have a significant negative impact on the Croatian economy.[15]

CROATIAN LEGISLATION ON CLIMATE CHANGE ADAPTATION

The Ministry of Environmental and Nature Protection is required by Article 118 of the Croatia's Environmental Protection Act to develop a comprehensive action plan for adapting to climate change. In coordination with EU strategy recommendations for climate change adaptation and with the support of various EU financing instruments, Croatia is currently in the process of drafting a national action plan. Public consultations are currently being held on statutory and regulatory changes and are expected to run until summer 2014. The adaptation strategy involves concentrating on sectors that are seen as being particularly at risk of being impacted by climate change. These include water resources, agriculture, forestry, biodiversity and natural ecosystems, coastal zone management, tourism and healthcare. Here it is important to define the activities and measures that have priority, in order to then be able to integrate the relevant adaptation measures in sectoral development plans and their corresponding strategy papers.

To this aim, a cross-sector committee was recently established at the national level in order to coordinate policies and measures relating to climate change adaptation and climate protection. This two-tier committee is made up of representatives of ministries and public authorities (who discuss the political implications) plus experts and further specialists from sectoral institutions (who deal with the technical problems). Committee members are elected for 18 months to guarantee a certain level of coherence.

Although there are as yet no detailed strategies relating to concrete adaptation measures, the first signs of activities being undertaken with a certain focus on practical adaptation are starting to be seen within certain sectors, such as:

- Agriculture: Changes to the processes involved in wine production as a reaction to earlier blooming periods, increased grape cultivation and expansion of wine production into continental growing regions. Disaster management: Changing fire protection measures to adapt to potentially longer extinguishing intervals and to an increase in average temperatures in summer months; an expansion of activities between the islands, the coast and the continental areas; an intensification of emergency care in heatwave periods.
- Coastal protection and biodiversity: Protection of species; conservation of migration corridors for species that have to adapt to improved living conditions; changes to the management of nature reserves; adaptation of protection programmes; supporting the creation of an infrastructure that allows for the constructive assessment of the current state of ecosystems, while projecting their future development and monitoring changes occurring within them.
- Coastal zone management: In 2012 Croatia ratified the protocol for integrated coastal zone management across the Mediterranean, in order to bring the development of a national strategy for the integrated management of coastal zones in line with regional action plans and programmes. The national strategy should identity weaknesses and potential threats, while incorporating plans for prevention, climate protection and adaptation measures based on the potential effects of natural disasters.

The following projects featuring practical measures relating to climate change adaptation have already been implemented:

- The project entitled Integrating the Effects of Climate Variability and Climate Change into the Integrated Coastal Zone Management Plan is being carried out as part of the UNEP/MAP programme. The project focuses on the coastal area of Croatia and especially on Šibenik-Knin county, which is one of the Mediterranean pilot regions, and is aimed at developing an integrated coastal zone management plan for the entire country.
- The regional project OrientGate[16] focuses on the implementation of coordinated measures in south-east Europe with the aim of providing a better understanding of the impacts of climate change on the water regime, forests and agro-ecosystems. The primary objective is the networking and exchange of climate expertise to benefit policy makers. The

15 | Ibid., p. 25.

16 | OrientGate, http://orientgateproject.org [28 July 2014].

project incorporates two partners from Croatia: the Croatian Meteorological and Hydrological Service and the city of Koprivnica.

- The EU climate project initiated by the European Commission's Directorate-General for the Environment entitled Adaptation Strategies for European Cities[17] includes the Croatian city of Zadar and aims to develop local adaptation strategies. Zadar has already devised such an action plan for 2013.
- The capital city Zagreb has already completed the first phase of its study entitled Climate Adaptation Plan for the City of Zagreb.
- As part of the South East European Forum on Climate Change Adaptation (SEEFCCA),[18] the Croatian Red Cross organises workshops and public discussions in coordination with the Croatian Ministry of Health, supports the distribution of teaching materials and helps provide direct consultancy services to older people.

CLIMATE POLICIES OF THE CROATIAN GOVERNMENT

It is a testament to the poor state of the environmental protection and climate policy in the current Croatian government that the prominent champion of environmental causes in the governing Social Democratic Party of Croatia (SDP) and former Minister for Environment and Nature Protection, Mirela Holy, terminated her party membership in June 2013 and left the SDP parliamentary group following a dispute lasting months with, among others, her successor as Minister for Environment and Nature Protection, Mihael Zmajlović, concerning the issue of founding a new national parks authority. She accused the SDP not only of having failed to implement the 14 amendments that they promised in the parliamentary debate, but also of violating Plan 21 of their own election manifesto in their refusal to set up such an agency, and that they therefore risk failing to meet the targets set by the European Union.[19] She disagreed so fundamentally with this policy decision that she left the party to found a new one, which is more dedicated to meeting European environmental and climate-related goals than the governing SDP. She warned that Croatia may now be threatened with penalties from the European Commission, as it has not adhered to the current EU directives in this field.[20]

She claimed in an interview after leaving the party that many of the strategic investment projects intended to boost Croatia's economic growth, such as the Plomin 3 thermal power plant, the golf complex on Srđ and the Ombla hydropower plant, contradict national and European environmental protection and climate goals. She expressed her hope that the Ombla project would not be carried out and that a serious partner for the implementation of the Plomin 3 project would fail to materialise. The golf complex on Srđ is the only project she considered realistic due to the enforcement of strict environmental regulations.[21]

She regrets that the European Commission-supported draft laws that she introduced to parliament regarding waste disposal and conservation of the environment were ignored by the government, because she fears it will lead to financial penalties and believes that the citizens expect such regulations and will now make their disappointment with the government known. As she sees it, if a political party winning an election fails to live up to its pre-election promises, one should not be surprised if approval ratings among voters begin to drop and new elections are called for.

17 | European Commission, "Adaption Strategies for European Cities. EU Cities Adapt", http://eucities-adapt.eu [28 July 2014].
18 | SEEFCCA, "About the SEE Forum on CCA", http://seeclimateforum.org/CCA-Forum/1/Home.shtml [28 July 2014].
19 | Tea Romić, "Vlada ne prihvaća uvjet Mirele Holy za ostanak u SDP-u", *Večernji list*, 19 June 2013, http://vecernji.hr/hrvatska/u-571611 [28 July 2014].
20 | Natasa Radić, "Former environment minister leaves her party", Independent Balkan News Agency, 24 June 2013, http://balkaneu.com/environment-minister-leaves-party [28 July 2014].
21 | Anto Janković, "Koruptivno, skupo i neučinkovito gospodarenje otpadom", *Deutsche Welle*, 22 November 2012, http://dw.de/p/16nYd [28 July 2014].

LATVIA

Jānis Brizga

INTRODUCTION

Latvia signed the UNFCCC shortly after it regained independence in 1992 and ratified the convention in 1995. The Kyoto Protocol was signed and ratified in 1998. Climate change is nevertheless still not given high priority in Latvian politics.

Just like the other countries of the former Warsaw Pact, Latvia has significantly reduced its carbon emissions in the past 20 years. It therefore found it easy to meet its Kyoto targets. Latvia had already cut its carbon emissions by 37 percent by 2000, based on its 1990 levels, and has since seen emissions continue to be reduced by 40 percent, which is in part due to the consequences of the 2008 financial crisis. The reduction was made possible by Latvia's decline in population and its economic downturn, which resulted in a change to economic structures and higher energy prices.

The largest greenhouse gas producers are the energy, transport and agriculture sectors. As half of Latvia's territory is forested, the area that absorbs CO_2 is very large. The energy sector in particular was subjected to major changes in the last 20 years, which enabled greenhouse gas emissions to be cut in half. However, it continues to produce 75 percent of the country's greenhouse gases. The use of heavy fuel oil, shale oil and coal over the same time period was significantly reduced as result of the switch to gas and wood.

Latvia obtains 35 percent of its energy from renewable energy sources, as the majority of the energy is produced by hydropower plants, frequently using co-generation systems. Furthermore, many households rely on wood for their heating – this makes up 28 percent of total consumption of primary energy.

Yet there is still great scope for improvements. If no changes are made to Latvia's climate policy, its greenhouse gas emissions will again rise by 19.6 percent by 2020.[1] The sectors expected to experience the greatest increases are energy, agriculture, manufacturing and transport.

PUBLIC OPINION

The latest Eurobarometer survey[2] revealed that 61 percent of Latvians believe the economy and the challenges it faces are the most important issue that the global community has to tackle, while a third (33 percent) see climate change as the biggest problem. When compared to their fellow Europeans, Latvians are among Europe's sceptics when it comes to climate change. Compared with a similar survey from 2011, the number of those who view climate change as the largest unsolved problem has fallen by 18 percent.

Despite the fact that only 12 percent of those surveyed considered their own actions to be important, there is another important aspect that needs to be taken into account when we evaluate individuals' behaviour: there are many more people who lead a low-carbon lifestyle without consciously deciding to do so. This results in Latvia's ecological footprint being much smaller than the EU average. This is closely linked to the economic situation, which prevents much of the population from having a high level of energy consumption. A case in point is Latvia before the Ukraine crisis adopting a very uncritical stance on fossil fuels as compared to the rest of the European Union.

Energy efficiency and renewables are favoured in Latvia. Some 83 percent of those asked believed that targets should be set regarding the use of renewable energies, and nine in ten people polled think that the government should promote improvements to energy efficiency. The support for these measures is relatively high as they are linked to higher living standards.

Some 67 percent of those surveyed agreed that improved energy efficiency would create more jobs, thus helping to provide a solution to national economic problems. However, this figure is lower than the EU average of 80 percent.

It should also be noted that the subject is barely discussed in the political arena, nor is it given any priority in government policy or in the media.

1 | Physical Energy Institute, Study, "Latvijas Siltumnīcefekta gāzu emisiju un piesaistes prognožu līdz 2020. gadam sagatavošana saskaņa ar Eiropas Parlamenta un Padomes Lēmumu No. 280/2400/EK".

2 | European Commission, *Special Eurobarometer* 409, "Climate Change", 04/2014, http://ec.europa.eu/public_opinion/archives/ebs/ebs_409_en.pdf [28 July 2014].

POLICIES TO DECELERATE CLIMATE CHANGE

Latvia has been involved in negotiations over global climate change since the beginning of the 1990s and, as an EU member state, has also participated in formulating the EU's positions and strategies. Latvia's strategy to decelerate climate change from 2005 to 2010 was based on the requirements specified by the UNFCCC, Kyoto Protocol and EU climate change legislation. Although strategic aims – both at the national level (e.g. environmental policy guidelines from 2009 to 2015) and at the EU level (e.g. the energy and climate package) – go way beyond 2010, it is unclear as to whether the programme will be extended from 2010 onwards or be replaced by another strategy.

Due to the current global and EU-specific climate policies, Latvia was able to generate significant sums of money from various EU and EEC funds (ETS, Structural and Cohesion Funds). On top of that, Latvia received income from its emissions trading.

At the same time, the government has set itself clear targets for reducing greenhouse gas emissions and for developing renewable energies in accordance with the EU's 2008 energy and climate package. As an EU member state, Latvia is bound to EU legislation and as such has set itself certain core objectives to be achieved by 2020 as part of the EU energy and climate package from 2008. These include:

- Some 40 percent of energy (based on consumption) should come from renewable sources by 2020 (this figure was 34.3 percent in 2009, 32.5 percent in 2010, and 33.1 percent in 2011).
- Greenhouse gases should be reduced by 20 to 35 percent by 2020, compared to its 1990 levels
- Latvia's emissions in sectors that are not included in the Effort Sharing Decision (ESD)[3] are allowed to rise by up to 17 percent – measured against figures from 2005.
- Emissions governed by the ETS should be 21 percent below the 2005 levels.

Latvia has also set further objectives for the energy sector (regarding both renewable energies and energy efficiency) and for the transport sector (renewable energy sources should account for 10 percent of the transport sector's energy consumption by 2020 – only 1.1 percent came from renewable sources in 2009, 3.3 percent in 2010 and 4.8 percent in 2011).[4] However, the long-term objectives are not explained in greater detail, making it difficult to evaluate the measures and their long-term impact on human-caused greenhouse gas emissions and to monitor their compliance with the UNFCCC objectives.

The government has developed a long-term strategy for the period up to 2030. A renewable energy regulation covering the same period, which aims to increase the share of energy coming from renewable sources to 40 percent, will also be finalised. The regulation was discussed for two years before a consensus was reached among the individual stakeholders. However, the economics ministry has again delayed its introduction as it considers the regulatory measure too costly.

Significant challenges stand in the way of Latvia introducing a general climate policy – starting with the monitoring of the implementation to the forecast that energy consumption is set to rise by 55 percent during the same time that the share of renewable energy systems is supposed to increase.[5]

CONCLUSIONS

Latvia has significantly increased its GDP per capita in the last ten years without seeing an increase in greenhouse gas emissions. There continues to be great potential for a further increase in wealth and thus in emissions, as Latvia's GDP per capita lies below the EU average. The challenge lies in finding a way to further improve living standards without this being accompanied by higher emissions.

EU and national strategies could play an important role in accelerating these necessary improvements. The majority of the industrial sectors with comparatively high emissions are specified in various strategies, for instance, in the EU ETS and in national climate strategies. These strategies only provide minor incentives to reduce carbon emissions.

One of the priorities of the Europe 2020 strategy in the context of climate change and energy sustainability is to subsidise economic sectors that produce little CO_2. This is supported by the European Commission's Roadmap to a Competitive Low-Carbon Economy.

3 | The emissions of most sectors, such as transport, buildings, waste and agriculture, are not included in EU-ETS.

4 | Republic of Latvia, Ministry of Economics, "Atjaunojamie energoresursi", 16 October 2012, http://em.gov.lv/em/2nd/?cat=30170 [28 July 2014].

5 | VN (UNFCCA), "Report of the in-depth review of the fifth national communication of Latvia", FCCC/IDR.5/LVA, 14 November 2011, http://unfccc.int/resource/docs/2011/idr/lva05.pdf [28 July 2014].

Latvia lacks a clear national strategy to support this movement, and public support for a green economy is low compared to the European average.

It is becoming clear that Latvia urgently needs to overcome all kinds of hurdles. Its energy and climate strategy needs to be developed in a way that promotes economic growth without increasing carbon emissions. The proposed limit values are not sufficient to meet the ambitious climate targets. Taking all factors into consideration, what is required are a leader capable of mobilizing public opinion and a well-conceived strategy for moving toward a low-carbon, more energy-efficient society.

A woodland area in the Gauja National Park near Cēsis. As half of Latvia is forested, its ecosystem can absorb lots of CO_2.

MACEDONIA

Anja Czymmeck

THE EFFECTS OF CLIMATE CHANGE ON MACEDONIA

Despite global climate change and the role of humans in creating the problem not being among the main issues on Macedonia's political agenda, the reality of increasing temperatures and fluctuating rainfall has been debated and discussed in the public arena. Last winter was characterised by very dry weather before giving way to a spring featuring record-breaking levels of rainfall. The populations of Bosnia-Herzegovina and neighbouring Serbia have also become acutely aware of the devastating consequences of extreme rainfall. That said, climate change has taken a back seat in public discussions to the more tangible social and economic problems and to domestic and foreign policy issues.

An increase in temperatures combined with falling levels of rainfall is expected across the entire Balkan region, according to the IPCC's calculations.[1]

The effects of this trend can already be seen. Temperatures upwards of 45 °C were recorded during heatwaves in recent summers. An increase in droughts, wildfires, erosion of fertile land and floods is to be expected as a result of the rising temperatures. This will hit the already crisis-struck agriculture sector especially hard.[2] In addition to the direct damages from the changing weather conditions, water demand will also increase in response to warmer temperatures, while water prices will increase as well in response to the decrease in rainfall.

WILL RENEWABLES REDUCE FOREIGN DEPENDENCE?

Energy efficiency and energy policy have recently begun to carry greater political weight, which is almost certainly linked to the rising energy prices faced by the Macedonian population. This is a consequence of the country importing a large percentage of its energy. Although the country has coal deposits, which are also subsidised, Macedonia still has to meet around 40 percent of its energy needs from foreign

1 | University of Gothenburg, "Macedonia – Environmental and Climate Change Policy Brief", Final draft, 4 May 2009, p. 9.

2 | The World Bank, "Reducing the Vulnerability of FYR Macedonia's Agriculture to Climate Change", Press release, 5 December 2013, http://worldbank.org/en/news/press-release/2013/12/05/reducing-vulnerability-of-macedonian-agriculture-to-climate-change [28 July 2014].

sources.[3] On its path to becoming a robust economy, Macedonia is focusing on expanding its industry and is thus reliant on a stable and economical energy supply. This will remain dependent on fossil fuels in the future. The country plans to continue to generate 70 percent of its primary energy from fossil fuels until 2020. In 2030 the figure will still be at 60 percent.

Germany's energy transition only serves as a model in Macedonia to a limited extent and is therefore not widely discussed. This is in no small part down to the fact that Macedonia – unlike Germany – has no nuclear power plants, so there is also no public debate about the nuclear phase-out to shift the political focus to the subject of energy. Recent years have also seen Macedonia cautiously steer towards renewable energies and the possibilities surrounding them, again independently from the German model. Six larger hydropower plants and a number of smaller ones have also been built. Although the country has the potential to generate geothermal energy, this possibility has yet to be explored.[4] As a result, it is difficult to conclude that the expansion of renewable energies in the medium term can significantly help reduce the reliance on foreign energy sources and fossil fuels. Hence, there is reason to doubt whether the official energy-saving target of 21 percent by 2020 will be achieved. The Bogdanci wind farm was built at the end of 2013 and is the first of its kind in Macedonia. It was financed by loans from KfW Development Bank and is expected to guarantee an annual production of 100 gigawatt-hours.[5]

STATE AND CIVIL SOCIETY APPROACHES

As there is often a lack of interest in subjects relating to environmental policy, the international community plays a leading role in spreading environmental awareness among the population and in promoting legal implementation through political channels. Many successes have been achieved in this area. After many years without a forward-looking plan for the energy sector, something which was criticised in the United Nations' first Environmental Performance Review (EPR) of Macedonia, the government released two strategy papers in 2010 – one setting out a complex energy development plan for the period up to 2030 and the other detailing how to improve energy efficiency by 2020.[6] These programmes were coordinated with one another and should help, along with the recently passed law on renewable energy sources,[7] ensure reductions in energy consumption, particularly in the industrial sector, while also helping bring about the more economical and efficient use of energy. The law on renewable energy sources is supposed to guarantee favourable feed-in tariffs to operators of renewable energy plants. In addition to environmental policy reasons, this is aimed at gradually reducing Macedonia's dependency on other countries.

Macedonia was one of the signatories of the Kyoto Protocol and the UNFCCC. The country's desire to join the European Union provides motivation to fulfil these commitments. The European Union's progress report in 2013 confirmed that Macedonia had agreed to adopt many relevant EU standards.[8] Yet it has frequently failed to implement these, despite the fact that the necessary structures are already largely in place. For instance, a project office for climate change was set up within the environment ministry in 2000 to coordinate the different approaches to combating climate change at the national level and to act as a point of liaison with international programmes. There is also a National Climate Change Committee (NCCC), which is made up of government officials from the responsible ministries, scientific research institutions, NGOs and members of the private sector. It was established as an advisory body for all state measures relating to the fight against climate change.

Local authorities are becoming increasingly involved in the dialogue in order to partially decentralise the efforts, which indeed makes sense. However, this must not be allowed to proceed in an uncontrolled manner. It should instead be constructively accompanied by training for those responsible, regular monitoring and, not least, sufficient funding. There is a great deal of catching up to do in this respect.[9]

There are also initiatives at the civil society level aimed at promoting the sustainable use of natural resources. These are often internationally active so as to have a greater impact and to leverage the available expertise to the fullest. An example is the

3 | Republic of Macedonia, South East European Forum on Climate Change Adaption (SEEFCCA), "Climate Vulnerability Assessment", p. 32.
4 | N. 1, p. 5.
5 | "First components of Bogdanci wind park have arrived", *Republika*, 13 November 2013, http://english.republika.mk/?p=105547 [28 July 2014].
6 | UN, "United Nations Economic Commission for Europe Environmental Performance Reviews the Former Yugoslav Republic of Macedonia – Second Review – Synopsis", New York and Geneva, 2011.
7 | N. 1, p. 6.
8 | European Commission, "The Former Yugoslav Republic of Macedonia 2013 Progress Report", SWD (2013) 413 final, 16 October 2013, http://ec.europa.eu/enlargement/pdf/key_documents/2013/package/mk_rapport_2013.pdf [28 July 2014].
9 | N. 6.

project entitled Public Dialogue on the Sustainable Use of Energy in Southeast Europe. It was initiated by the School of Political Studies in Southeast Europe in cooperation with GIZ and the Konrad-Adenauer-Stiftung.[10] Its objective is to initiate and subsequently sustain a dialogue between local and national authorities and the private sector and, in doing so, bring all important stakeholders around one table in order to remove any existing obstacles, share expertise and report any difficulties regarding programme implementation and financing.

A strong resonance in society will generally only occur once the public is directly affected by the changes – such as in the form of rising prices. In summer of 2012 protests, which lasted several months and regularly drew more than 10,000 people, were held to demonstrate against rising energy prices and the simultaneous fall in general living standards.[11] These events demonstrated that energy policy in Macedonia cannot be detached from its social impact, while also showing how changes to the pricing structure can quickly become matters of vital importance.

A balancing act is required to satisfy both this problem and the necessary and internationally mandated reforms in this area – it is one of the largest tasks that the government and Macedonian people will face in the coming years.

10 | "Boosting Energy: How Can Local Communities Contribute? – Public Dialogue of sustainable Energy in Southeast Europe", Skopje, 11/2013.

11 | Ana Stojilovska and Sonja Zuber, "Energy poverty in Macedonia", Policy Brief, Konrad-Adenauer-Stiftung, 9 October 2013, p. 3, http://kas.de/mazedonien/en/publications/35851 [28 July 2014].

POLAND

Maximilian Hedrich

Whether by international or by European standards, Poland cannot be considered one of the forerunners in the field of climate change and environmental policy. This is illustrated by the share of its energy that comes from renewable energy sources. The figures from 2012 speak for themselves: the majority of Poland's energy is generated by coal (55 percent), followed by oil (26 percent) and gas (15 percent). Renewables only make up four percent of Poland's energy mix, with most of this coming from hydropower and biomass power plants.[1] In 2009 the Polish government released a strategy paper, Energy Policy of Poland Until 2030, to address the problems that were already evident at that time, focusing on the following key objectives: improving energy efficiency, safeguarding the availability of fuels and their energy content, encouraging diversification in energy production (in this case the introduction of nuclear energy), developing new ways to use renewables, creating competitive fuel and energy markets, and reducing the environmental impact of electricity generation.[2] Due to the Fukushima disaster, many EU partners were particularly resistant to the point concerning the introduction of nuclear energy. However, Poland does not see any other alternative because its energy needs are expected to double between 2000 and 2020. The plans have currently been put on ice, largely due to unanswered questions about nuclear waste disposal and financing.

SWITCH TO RENEWABLES AT A STANDSTILL

The figures mentioned on renewables' share of the energy mix present the Polish government with serious problems, as the EU Directive on the Promotion of the Use of Energy from Renewable Sources (2009/28/EC) has not been implemented properly or in due time. In the worst-case scenario, the European Union could impose huge financial sanctions on Poland (up to €133,000 per day, backdated to the implementation deadline of 5 December 2010).[3] Just how far

1 | U.S. Energy Information Administration (EIA), "Poland. Country Analysis Note", http://eia.gov/countries/country-data.cfm?fips=pl [28 July 2014].

2 | Republic of Poland, Ministry of Economics, "New draft of 'The Polish Energy Policy until 2030'", http://mg.gov.pl/NR/rdonlyres/033D8417-33CC-4054-9781-E19487CFF784/48244/NewdraftofThePolishEnergyPolicyuntil2030.pdf [28 July 2014].

3 | Thomas Winkler, "Polen: Kohle statt Energiewende" (Poland: Coal instead of switch to renewables), EU-Infothek, 26 August 2013, http://eu-infothek.com/article/polen-kohle-statt-energiewende [28 July 2014].

The Belchatów power plant in Łódź Voivodeship is considered to be Europe's largest emitter of CO_2.

Poland is lagging behind in terms of making the transition to renewable energies can be seen if we look at the EU's 20-20-20 targets. Poland should already have been generating 7.5 percent of its energy from renewable sources by 2010. The figures show that it failed to meet this target by a huge margin. The likelihood of Poland achieving the EU's proposed 20 percent share of renewable energies by 2030 now seems to be very remote. One can conclude that investment in the sector is lacking and that the full potential for such investment is still untapped. However, the Polish government does not want to be seen as letting the side down when it comes to climate and environmental policy and is determined to work on finding a swift solution. Several measures have been initiated to increase the share of renewable energies, such as tax privileges and the 50 percent discount on the costs of feeding green electricity into the grid. These measures are largely financed by the Operational Programme – Infrastructure and Environment, which made €37.6 billion in funding available over a period of seven years (2007–13). The Cohesion Fund also provided €22.18 billion, while the European Regional Development Fund (ERDF) allocated 5.74 billion.[4]

4 | European Commission, "Regional policy – Inforegio Development Programmes. Poland", http://bit.ly/1lSzMI4 [28 July 2014].

SHALE GAS AND COAL: POLAND'S PATH TO GREATER ENERGY AUTONOMY?

The current crisis in the Ukraine has triggered an energy policy debate that revolves mainly around energy supply and energy security. The general topic of climate change is neither an important subject of discussion in the political arena, nor among the general public or in the media. Even before the Ukraine crisis, the energy policy debate in Poland practically focused only on two topics: the promotion of shale gas and the future of the coal industry.

Poland has relatively large shale deposits, which the Polish government hopes will afford the country greater independence from Russian gas. As a former Soviet satellite state, Poland pays almost twice as much for Russian gas as western European countries. Poland is charged about €500 for 1,000 cubic metres of Russian gas, the highest price in the European Union, while western European buyers have to pay just €300 for the same amount. The current situation in Poland's neighbouring country has rekindled the shale gas debate. Current estimates calculate the country's shale gas deposits to be between 346 and 768 billion cubic metres. But the initial euphoria has been dampened by the fact that the deposits are buried relatively deep down, meaning that extraction costs would be enormous.[5] However, Prime Minister Donald Tusk still hopes to see Poland enter the shale gas market before his second term of office ends in 2015. There is more to it than simply the economic aspect. Because of the Poland's history, the population has developed a fear of being overly dependent on its neighbours, especially Russia, and this plays a key role in this situation. Taking this historical perspective into account, Poland's energy policy features the following guiding principles. Poland demands to be included in the decision-making process for any matters regarding international energy policy. Unilateral action by Germany or Russia, such as in the case of the Nord Stream pipeline, are viewed with suspicion. Poland also wants to reduce its dependence on Russia by potentially extracting shale gas or by introducing nuclear energy. As a result, the principle of diversification is favoured over liberalisation, prompted by the fear of Russian companies exerting too great an influence on the Polish energy market.[6]

5 | Polish Geological Institute, "Assessment of shale gas and shale oil resources of the lower paleozoic Baltic-Podlasie-Lublin basin in Poland. First Report", Warsaw, 03/2012, http://www.pgi.gov.pl/pl/dokumenty-in-edycja/doc_view/769-raport-en.html [28 July 2014].

6 | Adam Grzeszak, "Analyse: Energie – Herausforderungen für Polen" (Analysis: Energy – challenges for Poland),

ECONOMIC GROWTH VS ENERGY TRANSITION

The Polish government is striving to promote a sustainable and environmentally friendly climate and energy policy, but not at any price. In comparison to other states of the former eastern bloc, Poland can boast very positive economic growth since 1989. Compromising this with the huge costs of an energy transition is neither in the best interests of politicians nor the public. Rising energy prices would place too much strain on the low-income sections of the population, not to mention stoke fears of losing the many jobs provided by the coal industry. Poland has long been proposing to share the financial burdens of energy policy. This would relieve countries that cannot handle the costs themselves – like Poland – while ensuring their economic development is not hindered. The population's fear of losing their hard-earned prosperity for the sake of an energy transition must be taken seriously. This is especially true if one looks at the behaviour of other emerging economies, such as China and Brazil, which make no compromises when it comes to prioritising economic growth and the wealth creation that comes along with it, while at the same largely neglecting climate and environmental protection. Getting the population on its side in the switch to renewables is a key challenge facing the Polish government, which is currently being complicated by the perception of Germany's energy transition. "If Germany can't manage it, how are we expected to?" is a frequently heard comment. This is another reason why exploring for shale gas and maintaining a strong coal industry are gaining in popularity both among the public and political actors.

POLAND'S HOPE – AN ENERGY UNION

In recent weeks, partly due to developments in neighbouring Ukraine, there have been increased calls for a common European energy union, one initiated by Poland. The proposal of an "energy community" is not new. As early as 2005 and 2006, when Russian-Ukrainian gas relations went through a crisis, Poland was pushing the proposal of an "energy NATO" that aimed to safeguard the energy supply of all member states by virtue of the principle of mutual assistance.

An institutionalisation and stabilisation of energy relations was then at the forefront as it is now. On closer inspection, it becomes clear that the intention was to develop an energy policy that was not dependent on Russia, while also creating the wherewithal to blunt Russia's political power that is almost exclusively down to its raw materials. However, Poland's proposal at the time was met with a lukewarm response from the majority of the EU member states. Its stance was to completely exclude Russia from the energy community. Western European countries considered a union only to be viable if Russia was included.[7] Poland currently seems to be experiencing a feeling of déjà vu. In pursuing the goal of a European energy union, Poland is again trying to end its dependence on Russian energy sources. The reaction of western partners so far has been marked more by polite restraint than unequivocal support.

German Federal Agency for Civic Education, 6 June 2012, http://bpb.de/137784 [28 July 2014].

7 | Oliver Geden, Andreas Goldthau and Timo Noetzel, "'Energie-NATO' und 'Energie-KSZE' – Instrumente der Versorgungssicherheit?" ('Energy NATO' and 'Energy CSCE' – supply security mechanisms?), discussion paper, German Institute for International and Security Affairs (SWP), pp. 8–10, http://swp-berlin.org/fileadmin/contents/products/arbeitspapiere/Energie_KS_KSZE_geden_goldthau_noetzel.pdf [28 July 2014].

RUSSIAN FEDERATION

Claudia Crawford | Simon Kurz

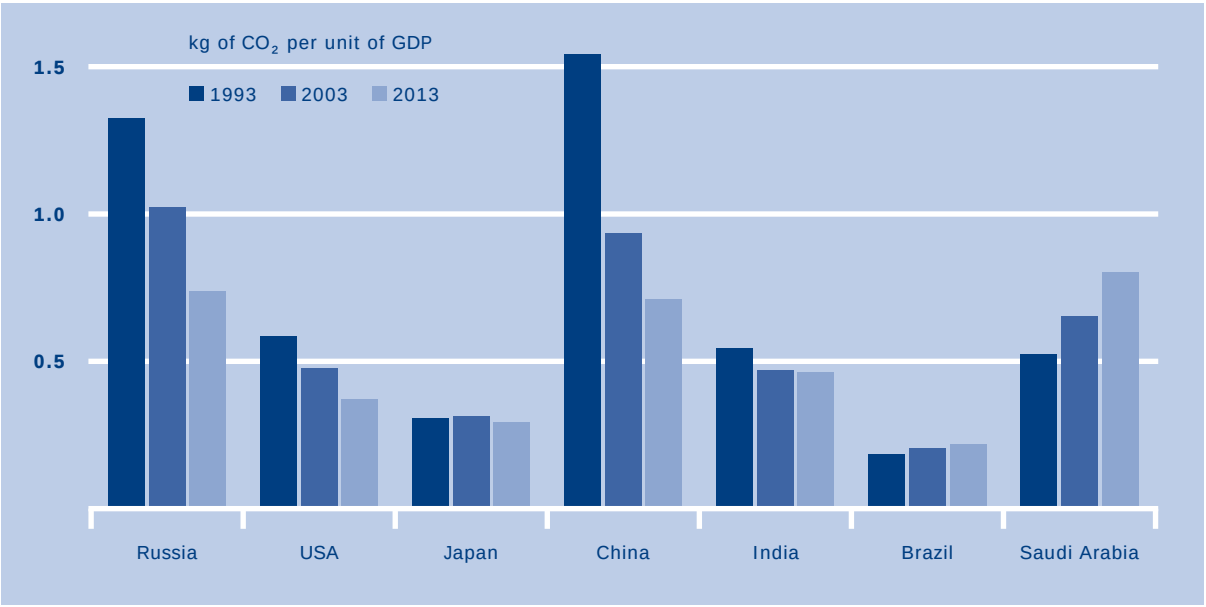
RUSSIA: ENERGY EFFICIENCY OFFERS OPPORTUNITIES

Anyone who has been to Russia in winter will have noticed the overheated rooms or heaters without thermostats. Regulating temperature by opening windows – this is symptomatic of Russia's approach to energy. The result: when compared to other nations, such as the EU countries and the United States, its ratio of carbon emissions to GDP is especially high (see fig. 1). With a 5.2 percent share of global emissions, Russia is the fourth-largest emitter of CO_2 in the world.[1]

In Russia, economic growth and the improvement of living standards are given a high priority by the population – climate protection is accorded lesser importance. Economic growth in Russia is closely related to the use of fossil fuels, which are available in abundance and hence at very low prices. Thus the question of the country's energy security is not given much thought. It has no urgent need to search for alternative energy sources and the creation of sustainable economic sectors, the "green" economy, plays a negligible role.[2]

The Russian government has an ambivalent relationship to climate protection measures for several reasons. Low domestic energy prices are an important means of cushioning social problems and improving the competitiveness of the Russian economy. It is also feared that the climate protection programmes in foreign countries, which target energy savings by reducing the consumption of fossil fuels, will lead to severe losses in Russia's raw material-dependent export industry. Depending on the price level, the

FIG. 1: CO_2 INTENSITY OF SELECTED COUNTRIES OVER TIME



Source: Enerdata, "Global Energy Statistical Yearbook 2014", http://yearbook.enerdata.net/CO2-intensity-data.html [28 July 2014].

1 | Cf. Jan Burck, Christoph Bals and Kathy Bohnenberger, *Der Klimaschutz-Index. Ergebnisse 2012 (Climate Protection Index. Results 2012)*, German Watch and Climate Action Network Europe, 12/2011, http://germanwatch.org/de/download/1685.pdf [28 July 2014].

2 | Cf. Georgij Safonow, "Klimawandel und Wirtschaftswachstum" (Climate Change and Economic Growth), *Russland Analysen* 274, 28 March 2014, p. 24, http://www.laender-analysen.de/russland/pdf/RusslandAnalysen274.pdf [28 July 2014].

direct income from the oil and gas sectors accounts for up to 40 percent of Russia's state budget.[3]

There is a prevailing scepticism among some Russian politicians as to whether climate change is caused by humans.[4] The Russian media rarely oppose this view and in fact support it. Very little is reported on the subject of climate change.[5] The only media reports that can be found frequently focus on the question of whether climate change actually exists and if it is human-induced. Reports that do acknowledge the existence of climate change hone in on its consequences, often only citing the benefits of climate change for Russia, such as the potential opening up of new areas for agriculture, the opening of new sea routes and access to the oil fields in the Arctic.[6] The reporting neglects to mention the negative effects, such as the thawing of the permafrost in Siberia (which would cause serious damage to the infrastructure) and the risk of extreme weather conditions (which could lead to increased droughts, flooding and forest fires). The fact that the general public awareness of climate change is so low is due in no small part to the poor reporting on the subject. There are NGOs in Russia that are attempting to address the subject of climate change, such as Greenpeace Russia, the WWF, the Socio-Ecological Union and the anti-nuclear movement Environment Defence. But these have very little influence on the political landscape in Russia. Since the end of the 1990s, the Russian state has largely switched from being a partner that cooperates with independent, critical NGOs to becoming a nemesis of such organisations.[7]

There are also administrative hurdles standing in the way of effective climate protection measures. Inherent difficulties arise in trying to link together aspects relating to the economy, energy industry, environment and health policy, at both the regional and national level.[8] This requires a great deal of consultation and coordination, and a functioning administration. Yet these prerequisites are not always in place.

It is against this backdrop that Russia has developed its rather passive stance towards international cooperation on climate protection, a position that is driven by its strategic interests. In 2004 the country ratified the Kyoto Protocol and in doing so played a role in its coming into effect, after the United States withdrew its own commitment to the agreement. But for Russia this move was important for its diplomatic prestige and for forcing the European Union to concede support for Russia's entry into the WTO.[9] It was also easy for Russia to meet the protocol's demands. The country was simply required to keep its emissions at a constant level, as they had already fallen drastically with the collapse of the Soviet Union.[10]

At the UN Climate Change Conference in Doha in 2012, the government refused Russia's participation in the second commitment period of the Kyoto Protocol. During this period Russia would have been required to actively commit to achieving reductions, and this would not have been compatible with Russia's emerging economic development, among other things. Russia has generally taken a critical stance towards the Kyoto Protocol in its present form, as it has not been ratified by some of the world's largest carbon emitters, such as the United States and newly industrialised countries like China.[11]

However, emissions savings are realistic in Russia in the future – simply because it has the potential to improve energy efficiency. This could also increase the competitiveness of the Russian economy, while providing an economic incentive to implement climate

3 | Cf. Kirsten Westphal, "Russland: Klimapolitik im Abseits" (Russia: Offside on climate policy), in: Susanne Dröge (ed.), "Die internationale Klimapolitik. Prioritäten wichtiger Verhandlungsmächte" (International Climate Policy. Priorities of key negotiating partners), *SWP Study*, SWP, Berlin, 12/2009, pp. 71–72, http://swp-berlin.org/fileadmin/contents/products/studien/2009_S30_dge_ks.pdf [28 July 2014]; cf. Alexey Kokorin and Anna Korppoo, "Russia's Post-Kyoto Climate Policy. Real Action or Window-Dressing?", *FNI Climate Policy Perspectives* 10, Fridtjof Nansen Institute, Hamburg, 05/2013, pp. 4–5, http://fni.no/doc&pdf/FNI-Climate-Policy-Perspectives-10.pdf [28 July 2014].

4 | Cf. Adnan Vatansever and Anna Korppoo, "A Climate Vision for Russia: From Rhetoric to Action", Carnegie Endowment for International Peace, 1 August 2012, http://carnegieendowment.org/2012/08/01/climate-vision-for-russia-from-rhetoric-to-action [28 July 2014].

5 | Cf. Olga Dobrovidova and Angelina Davydova, "The spectrum of environmental issues in the Russian media", Sergei Bobylev and Renat Perelet (eds.), *Sustainable Development in Russia*, Berlin and Saint Petersburg, 2013, p. 124, http://austausch.org/fileadmin/user_upload/veroeffentlichungen/SustainableRussia_WEB.pdf [28 July 2014].

6 | Cf. Vatansever and Korppoo, n. 4.

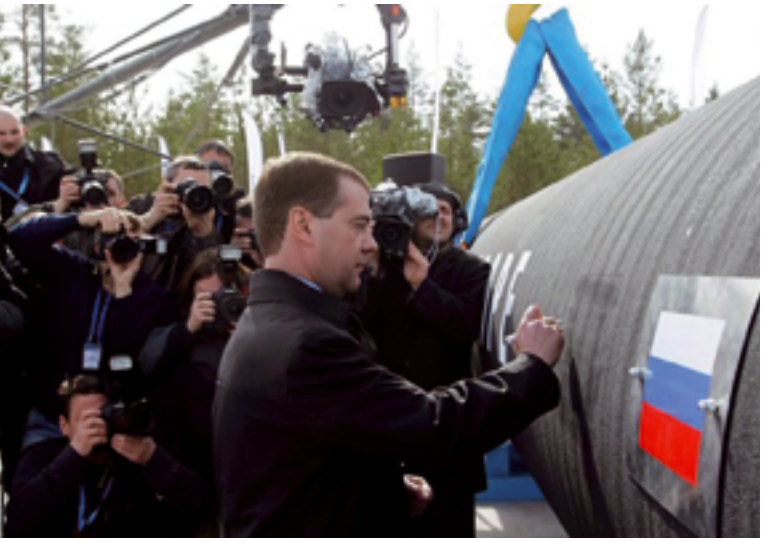
7 | Cf. Yevgeny Usov, "The role of NGOs and civil society in environmental protection 2013", Bobylev and Perelet (eds.), n. 5; cf. Kokorin and Korppoo, n. 3.

8 | Cf. Safonow, n. 2.

9 | Cf. "Kyoto-Deal: EU unterstützt Russlands WTO-Beitritt" (Kyoto Deal: EU supports Russia's accession to WTO), *Spiegel Online*, 21 May 2004, http://spiegel.de/politik/ausland/kyoto-deal-eu-unterstuetzt-russlands-wto-beitritt-a-300845.html [28 July 2014]; cf. Josephine Bollinger-Kanne, "Kyoto als Eintrittskarte in die WTO? Die russische Ratifizierungsdebatte" (Kyoto as admission ticket to WTO? The debate on Russian ratification), *Russland Analysen* 43, 29 October 2004, p. 2, http://www.laender-analysen.de/russland/pdf/Russlandanalysen043.pdf [28 July 2014]; cf. Vatansever and Korppoo, n. 4.

10 | Cf. Westphal, n. 3, pp. 69–70.

11 | Cf. Vatansever and Korppoo, n. 4.



The former Russian president, Dmitry Medvedev, at the start of the maritime construction phase of the Nord Stream pipeline.

protection measures. The data provided by the World Bank on Russia's energy intensity (GDP per unit of energy consumed) confirm that there is huge potential for savings – in 2010 Germany's energy use per unit of GDP was twice as high as Russia's, and the average level of the upper-middle-income countries (with which Russia is categorised) was 30 percent higher than Russia's.[12]

The Kremlin has already recognised this potential and in 2009 adopted a Federal Law on Energy Conservation and Improving Energy Efficiency. In addition to this, a 2008 Russian government directive aims to reduce the economy's energy intensity by 40 percent by 2020 compared to 2007 levels.[13]

The European Union and several of its member states supported Russia in this objective. In 2013 the EU also drew up the EU-Russia Energy Roadmap with Russia, which plans cooperative measures in the areas of energy efficiency, electricity and renewable energies. Germany is also supporting Russia in this proposal with several projects.

According to expert opinion, however, the energy efficiency law has thus far been deemed inadequate. It is said to be full of gaps and focuses almost exclusively on energy-saving measures in public buildings, while lacking the financial backing to be implemented. There has also been criticism of the law being adopted with a top-down approach from the federal level, which has led to serious difficulties in its implementation within the regions. This leads one to conclude that a multi-level system is required whereby all administrative levels are appropriately involved in the legislative process. This shortcoming has so far also had a negative impact on the cooperative projects with the European Union and its member states.[14] There is therefore scope for considerable improvement in climate protection matters – and not only in terms of this law.

12 | The World Bank, "World Development Indicators: Energy dependency, efficiency and carbon dioxide emissions", 2013, http://wdi.worldbank.org/table/3.8 [28 July 2014].

13 | Cf. Vatansever and Korppoo, n. 4.

14 | Cf. Alexander Gusev, 2013, "Energy Efficiency Policy in Russia: Scope for EU-Russia Cooperation", *SWP Comments*, SWP, Berlin, 06/2013, pp. 7–8, http://swp-berlin.org/fileadmin/contents/products/comments/2013C16_gsv.pdf [28 July 2014].

SERBIA

Henri Bohnet

The issue of climate change is gaining in importance among the population of Serbia. It is becoming ever more clear in the country that pollution of the environment and its impact on climate change is directly connected to personal health, quality of life, local infrastructure and economic opportunities, and Serbia's attractiveness to tourists and investors. Similar to the Mediterranean EU countries, the countries in southeast Europe, such as Serbia, are particularly vulnerable to the effects of climate change, including water shortages resulting from the combined effect of high temperatures and reduced rainfall. The increasing occurrence of extreme weather conditions in Serbia is also increasing the public's awareness of climate change.

Dam on Perućac Lake on the border between Serbia and Bosnia-Herzegovina. A significant share (21.2 percent) of Serbia's energy supply comes from renewable sources.

Even if climate change does not occupy the top spot on Serbia's political agenda, an increased political awareness among the public has been witnessed. The creation of a Climate Change Department within the Ministry of Energy, Development and Environmental Protection demonstrates that the increasing awareness about the issue has even reached the administrative level. However, the kind of cooperation and support from other ministries that the Climate Change Department requires has not yet been sufficiently developed, which further complicates the department's work. But it is too early to talk of "green mobilisation", as can be seen to some extent in western European countries. The green movement does not play any meaningful political role, even though there has been a green party in the country for many years.[1]

Environmental aspects and climate change are being increasingly addressed in the media at the local level. Climate change often receives greater media attention if local residents are directly affected. In these cases, the media will act on the behalf of residents in campaigning for improvements to their quality of life. An example of extensive media coverage of an environmental issue were the protests held by the residents of Pančevo and Bor between 2004 and 2008, which were triggered by the unbearably high levels of air pollution from outmoded chemical plants. The public discontent over pollution to the environment has not subsided, as the protests against water pollution in Užice in January 2014 demonstrate.

ENERGY POLICY

After signing the Energy Community Treaty between the European Union and several countries from southeast and eastern Europe, which expanded the EU's single energy market to include this region, Serbia made a significant step in the direction of Europe. Serbia's future national energy policy will be developed with this in mind. The objective is to trigger a modernisation process within the energy sector, which should result in full coordination with the EU acquis. In this context Serbia was the first member of the Energy Community from southeast Europe to devise a national action plan for renewable energies. It completed this renewables' plan in 2013, thus taking the first step towards setting out its energy strategy priorities for the next decade. These include energy security, a high share of renewables in its overall energy consumption and a liberalisation of the energy market. The plan also sets out measures to improve the cooperation between local, regional and national authorities. In order to guarantee national energy security and to fulfil its commitment to the Energy Community, Serbia is also pursuing an internationally coordinated energy policy that is expected to contribute to the global fight against climate change.

1 | The Greens of Serbia entered parliament for the first time in the 2014 parliamentary elections with the electoral alliance "New Democratic Party – Greens" together with the New Democratic Party newly founded by former President Boris Tadić.

As an EU candidate country and member of the Energy Community, Serbia is gearing its own policy initiatives entirely towards European policies on climate change and energy. The challenges Serbia faces in its accession process are fundamentally the same as those facing other countries in the region: a dependency on low-grade coal, a high dependency on oil and gas imports, and very poor energy efficiency. Hence, Serbia has made increasing renewables' share of the energy mix its main objective, while also placing more focus on reducing its dependency on energy imports, which met as much as 30.38 percent of Serbia's energy needs in 2011.

In order to satisfy the EU requirements for accession candidates, at least 20 percent of Serbia's energy consumption must come from renewable energies by 2020. It has already achieved this target as renewables currently account for 21.2 percent of the country's energy usage, according to Deputy Minister for Energy, Development and Environmental Protection, Dejan Trifunovic. Serbia has therefore set itself a new target as part of the Energy Community – 27 percent of its entire energy consumption is supposed to come from renewable energy sources by 2020.

In the past ten years, between 25 and 30 percent of the approximately €2 billion of EU funding was invested either directly or indirectly in environmental protection.[2] In addition to these financial contributions, EU Twinning projects also support the development of the environmental sector. The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has already signed up for three Twinning projects with Serbia. One aims to implement the EU Water Framework Directive, while the others focus respectively on strengthening administrative capacities for implementing air quality management and on providing assistance in introducing a chemical management system. A further project to introduce the EU Emissions Trading Directive was launched in September 2013. A French-German-Austrian consortium was awarded this particular contract.

Serbia's cooperation with European partners and EU institutions, such as the European Environment Agency, needs to be intensified when considering Serbia's status as an EU accession candidate. It is expected from the EU accession negotiations that the reforms required for Chapter 27 will prove the most costly. Improved cooperation is also important when involving civil society in environmental issues. In order to create a solid partnership between political decision makers and civil society representatives, Serbia needs to improve its public relations work. Critics from NGOs point to the lack of civil society participation.

The idea behind Germany's energy transition – the aspiration to shift the lion's share of national electricity production to renewable energies – is also present in Serbia. Without financial or professional support, however, this transition will be difficult to achieve. The German government's renewable energy export initiative that supports German companies seeking to enter foreign renewable energy markets could prove helpful in this regard, as could further EU initiatives.

INTERNATIONAL CLIMATE POLICY

As co-founder of the Sava Commission and an active member of the Danube Commission that drafted the internationally effective EU Strategy for the Danube Region, Serbia recognises the importance of international cooperation on climate policy at the regional and global level. In ratifying the UNFCCC in 2001 and the Kyoto Protocol in 2007, Serbia is contributing to the international fight against climate change under the auspices of the United Nations. Serbia's economic situation in the last twenty years along with insufficient public awareness made it necessary for the GEF to provide technical and financial support to facilitate the preparation of its first national report, which was published in 2010. Work and research on the second national report as part of its commitment to the UNFCCC is currently under way.

To this end, Serbia has declared its support for the UN targets for climate change mitigation. It should be noted, however, that Serbia's member status as a developing country under the Kyoto Protocol does not require it in any way to make binding commitments to reducing its greenhouse gas emissions.

2 | Adriano Martins, 2010, http://www.twinning-hw.rs/wp-content/uploads/2011/05/An-EU-perspective.pdf [7 February 2012].

SPAIN

Adriaan Kühn

CLIMATE CHANGE OVERSHADOWED BY THE ECONOMIC CRISIS

The debate surrounding climate change in Spain shows a clear disparity between the public's perception (of problems) on one side and their willingness to act on the other. The Spanish prove themselves to be well-informed in surveys and express their concerns about the consequences of climate change. However, there is little pressure from civil society on politics and the economy. The once ambitious political efforts have stalled. Climate policy is a subject for academics and experts; it rarely plays a role in the media or among the public.

PUBLIC PERCEPTION

The attitudes of the Spanish population towards climate change are well-informed. Climate change sceptics are in the minority: only around 5 percent of respondents were of the opinion that climate change did not exist.[1] An absolute majority (57 percent) believes that too little is being done to counter climate change. However, climate activists still complain that there is a disconnect between public opinion and the willingness of individuals in Spain to lead more climate-friendly lifestyles.

CLIMATE CHANGE AND POLITICS

Climate change fails to stir up much emotion in Spanish politics. There are two reasons for this:

- Green or environmental parties have only attained niche status in the Spanish party system. Some 25 "partidos verdes" are registered with the Ministry of the Interior – yet not one of them holds any influence at the national level. Environmental associations are also very rarely successful in setting the agenda for public debates. For the established parties there is little need to develop policies to react to such weak opposition. The importance given to environmental policy in general and to dealing with climate change in particular is reflected in its institutional implementation. When José María Aznar assumed the prime minister's office in 1996, a separate environment ministry was set up for the first time. In 2008 – at the start of José Luis Rodríguez Zapatero's second term as prime minister – a state secretary for climate change was even appointed. The environment ministry has since moved to the new Ministry of Agriculture, Food and Environment. Yet now there is only a directorate-general to address climate change (Oficina Española para el cambio climático).

- Climate change is overshadowed by the economic crisis – both in terms of the attention paid to the issue by the media and its priority among policy makers. It seems that most political actors take a cost-benefit approach that attempts to balance a climate-friendly energy policy with prospects of economic growth. Despite the long-term economic potential of green energy suppliers, further regulation efforts by decision makers are mostly seen as counter-productive, because the main concern is to quickly revive the Spanish economy.

CLIMATE CHANGE IN THE MEDIA

The Spanish press reports extensively on international climate conferences and discussions within the scientific community about climate change. But the media also take a national perspective in its coverage: the readers of Spanish daily newspapers will be informed, for instance, that rising sea levels would put hundreds of kilometres of sandy beaches at risk, which would threaten to stem the influx of tourists. Frequently occurring fluctuations in temperature are also said to be responsible for poor grape harvests and thus pose a threat to wine production. A recent study that examined the Spanish media's coverage of climate change came to the conclusion that it gives balanced views from various different perspectives. However, it also found that the journalists, in the majority of the media reports analysed, neglected to include an explanation of the scientific concepts and a clear illustration of the causes and consequences of climate change.[2]

Energy security is an issue in Spain. The country can cover around a quarter of its primary consumption with domestic production – a figure that is significantly below the EU average. While Russia is Spain's

1 | Cf. Pablo Ángel Meira Cartea et. al., *La respuesta de la sociedad española ante el cambio climático*, Fundación Mapfre, 2013.

2 | Bienvenido León and Alica de Lara, Ciencia y cambio climático, Rogelio Fernández Reyes and Rosalba Mancinas Chávez (eds.), *Medios de comunicación y cambio climático*, Sevilla, 2013, pp. 91–105, http://issuu.com/ladecom/docs/cambio_climatico [28 July 2014].

most important trading partner for oil, the majority of its gas comes from north Africa. Its main supplier in this region is Algeria. The Arab Spring dominated the debate surrounding the dependency on imported energy even more than the Ukraine crisis did. Concerns about this issue dissolved as widespread protests broke out against rising electricity prices.

For a long time, people in Spain hoped that renewable energy promotion would kill three birds with one stone: reduce its dependency on imported fossil fuels, cut its greenhouse gas emissions (Spain spent €770 million on emissions allowances from 2008 to 2012, making it second worldwide only to Japan) and fulfil its international commitments on climate change (such as the EU's 20-20-20 targets).

Like much else in Spain in recent years, subsidies for renewable energies were handed out (overly) generously. Operators of photovoltaic installations received almost €0.44 per kilowatt-hour in 2007, which was 575 percent above the average reference tariff for that year. While the property boom had become sluggish, a bubble emerged on the renewable energy market, especially in the photovoltaic sector. Measured in kilowatt-hours, renewables have grown by 19 percent annually since 1990, while traditional energy sources have not even managed to achieve 2 percent growth.

The subsidy programmes are – along with other factors such as the government's freezing of nominal electricity prices at the level of inflation – the reason the national budget is weighed down by a regulatory "tariff deficit" (déficit tarifario) totalling €30 billion. The huge funding gaps not only pose a threat to meeting the deficit targets agreed with Brussels, but also cause unrest within the population. The power bills of Spanish households have increased by 70 percent since 2005. In Europe only Cypriots and Maltese pay more for their electricity.

Now the government has to back-pedal. Subsidies, special tariffs and tax credits have been drastically cut or abolished. Investors are afraid they will lose their capital and have already started bringing arbitration claims against Spain in response to the legislative changes.

This just leaves the demand side of carbon reduction. The government plan Acción de Eficiencia Energética en España 2011–20 states that Spain still has clear potential to increase energy efficiency and reduce energy consumption per capita, when compared with its European neighbours.

The Spanish public is familiar with the term "Energiewende" from newspaper reports on the German coalition negotiations following Germany's 2013 national elections. Protests have been held against the government's proposal to extend the lifespan of a nuclear power plant. However, an early withdrawal from the nuclear energy programme is not being discussed.

Spain's ambitions with regard to European climate and energy policy are currently restricted to fulfilling its existing commitments. An official from the Ministry of Industry, Energy and Tourism writes: "We support the EU environmental policy…, but, in the current context of a weak economy, its impact on industrial production must be taken into account."[3]

Environmental associations, such as Ecologistas en Acción, on the other hand, always play the Brussels card if they want to exert pressure on the government. Last year Spain committed 29 violations of EU environmental regulations, making it the leading violator in this area according to European Commission figures.

Spain has earned a reputation of not being a foot-dragger when it comes to negotiating multilateral agreements. For instance, it acted as broker at the UN Climate Change Conference in Doha in 2012 that threatened to end in a stalemate. Yet Spain is certainly not a pioneer in climate policy. For the former environment minister Arias Cañete it was a success when, in the sixth national communication to the UNFCCC in 2013, he could "finally" announce that Spain's Kyoto targets had been met.

Almost nobody in Spain has any doubt that the United Nations is the appropriate forum for climate change negotiations. Climate policy, however, is relegated to the bottom of the Spanish government's list of international priorities. The rather slow progress in negotiations over a new climate regime may even suit the government.

3 | Manuel Valle Muñoz, "Política industrial sostenible y medio ambiente", *Economía industrial* 387, 2013, pp. 55–64.

SOUTHERN CAUCASUS (AZERBAIJAN, ARMENIA, GEORGIA)

Canan Atilgan

THE SOUTHERN CAUCASUS – TRANSIT REGION FOR FOSSIL FUELS OR GREEN ENERGY HUB?

Situated in a strategically important transit route between Europe and the raw material-rich states of the Caspian Sea region and the Middle East, the southern Caucasus receives a lot of attention in the international debate about energy policy and energy security. The current crisis in the Ukraine has again highlighted the EU's dependence on Russia for energy and thus the importance of the southern corridor for its long-term energy supply. The main focus of international interest in the southern Caucasus is, without doubt, on fossil fuels and thus primarily on Azerbaijan in its dual role as natural gas and oil producer and transit country for raw materials from central Asia. In the context of climate policy issues and renewables, Azerbaijan, Armenia and Georgia receive much less attention, despite the three countries having significant potential for the use of green technologies and renewable energy sources.

ENERGY AND ENVIRONMENTAL POLICY FRAMEWORK

Despite their geographical proximity, Azerbaijan, Armenia and Georgia are confronted with completely different energy and environmental policy problems. Azerbaijan is the only country in the region to be both a transit country for fossil fuels and a producer of natural gas and oil. It satisfies its entire energy needs from domestic production while gaining significant revenues from its gas and oil exports. Azerbaijan's economy is relatively energy-intensive and, because of the country's rapid economic growth, its energy needs are forecast to increase further in the coming years.

Armenia and Georgia, on the other hand, do not have any noteworthy natural resources to speak of and are reliant on imported fossil fuels. Unlike in Azerbaijan, energy dependence and security of supply are key issues in both countries. Armenia, which is largely isolated due to unresolved conflicts with neighbouring Azerbaijan and Turkey, imports most of its primary energy from Russia. Although its trade relations with Iran are expected to deepen in the long term, the country is currently dependent on Russian gas. Armenia is the only country in the southern Caucasus to use nuclear energy. In 2011, the Metsamor nuclear power plant met around 33 percent of Armenia's electricity needs.[1] Despite international concerns about the safety of the nuclear power plant, which is situated in a seismically active region around 30 kilometres from the capital city of Yerevan, the Armenian government does not presently see an alternative to nuclear power as the country's energy source. As the originally planned closure date of the nuclear power plant in Metsamor is 2016, Armenia's government drafted a law in 2009 for the construction of a new nuclear power plant in the country and signed agreements to this end with Australian company WorleyParsons, Russian company Rosatom and the Russian Ministry of Energy.[2] However, there are currently no concrete plans to decommission the old reactor, nor has construction begun on a new facility. In September 2013, Armenia announced that the lifespan of the Armenian nuclear power plant would be extended until 2026 for the time being in accordance with modernisation plans devised in cooperation with Russia.

Off the coast of Azerbaijan hundreds of artificial islands serve as drilling and production platforms.

1 | Source: World Nuclear Association (WNA).
2 | Source: WNA.

As a transit country for raw materials from Azerbaijan, Georgia plays a pivotal role in the southern Caucasus in the context of energy policy. The Baku-Tbilisi-Ceyhan oil pipeline and the Baku-Tbilisi-Ezurum gas pipeline connect Azerbaijan and Turkey across Georgian territory and are important components for the EU's proposed southern energy corridor. Hydropower is of key importance to Georgia's energy supply. As the country has an abundance of rivers and lakes, more than 75 percent of its electricity can be produced from hydropower.[3] Georgia currently has 14 large and medium-sized hydropower plants as well as a great number of smaller local plants. Another large power plant, the Khudoni dam, is expected to be put into operation in the mountainous region of Svaneti in 2018. The major project is highly controversial from a societal perspective, however, as it would involve the flooding of villages and the relocation of the local population.

CLIMATE CHANGE'S IMPACT ON THE SOUTHERN CAUCASUS

Meteorological data from recent years suggests that the effects of climate change are already evident in the countries of the southern Caucasus and that average temperatures are rising in a number of places. The models currently available forecast a further increase in average temperatures and a reduction in average rainfall in all three countries. If these developments continue, in the coming years it could result in not only regional water shortages but also heatwaves, particularly in Baku and Tbilisi.[4] Further climate-induced threats include landslides and debris avalanches in mountainous regions, floods after heavy rainfall in dry regions and soil erosion. Negative consequences for agricultural production are expected.

CLIMATE POLICY MEASURES

All countries in the southern Caucasus have ratified the UNFCCC and have committed to advancing climate protection at international conferences. However, Azerbaijan, Armenia and Georgia are not currently required to reduce their greenhouse gases as the countries' current emissions levels are all below the 1990 figures, despite experiencing significant economic growth at times in recent years.

In accordance with their international obligations, and in most cases with support from international actors, the three countries have begun to incorporate environmental and climate protection into their national strategies as well as set up relevant institutions. Azerbaijan, Armenia and Georgia have each submitted two comprehensive reports concerning the current situation, climate scenarios and possible strategies to the UNFCCC and are currently working on their third national communications. Georgia expects to submit its third report by the end of 2014.

While the three countries have developed programmes in recent years to improve energy efficiency and promote renewable energies, the issue of climate change has only recently been included in national strategies and problem analysis. Georgia's National Environmental Action Plan 2012–2016 defines the reduction of greenhouse gases and climate change adaptation as long-term objectives, while Armenia's Second National Environmental Action Plan from 2008 identifies climate change as a threat.[5] Azerbaijan's government set up the Climate Change and Ozone Center as early as 2001, and its state oil company has established a department that conducts research into issues related to environmental and climate protection. Despite its abundance of fossil fuels, Azerbaijan plans to develop renewable energy sources in the coming years, focusing particularly on wind and solar power.

Georgia's efforts on climate policy are motivated largely by the desire for more extensive integration and cooperation with the European Union. The capital Tbilisi and seven more cities have joined the EU's Covenant of Mayors Initiative, which aims to reduce greenhouse gases by 20 percent by 2020.[6] In its action plan, the city of Tbilisi set out the goal of reducing its greenhouse gas emissions by around 25 percent and, in the long term, becoming the "green capital" of the southern Caucasus.

Climate protection considerations are generally accorded little importance in the strategies of Azerbaijan, Armenia and Georgia, and climate policy goals are often formulated vaguely. The three countries are faced with the challenge of developing climate scenarios and adaptation strategies, and comprehensively

3 | Source: Ministry of Environment and Natural Resources of Georgia.

4 | Regional Climate Change Impacts Study for the South Caucasus, 2011, Implementer UNDP.

5 | The Climate Information Center, set up in the course of the First National Communication to the UN Framework Convention on Climate Change has been providing information on Armenian climate protection efforts since 1997.

6 | The cities are at different stages of implementation. Only Tiflis, Batumi, Gori and Telavi have submitted an action plan as yet. Three cities in Armenia and one in Azerbaijan city have also joined the Covenant of Mayors, but have not yet drawn up an action plan.

integrating the issue of climate change into their national development strategies. Gaps in the historical data available on climate change and greenhouse gases as well as a lack of (national) expertise are likely to complicate this process.

Climate change is not perceived as a pressing problem in large parts of the population or among policy makers. Economic development issues and the unresolved territorial conflicts in the region dominate public and political debate. A number of NGOs are active in the region in the field of environmental and climate protection, attempting to the raise public awareness to the dangers of climate change. For instance, the Regional Environmental Centre for the Caucasus, which was founded in 1999 with the support of the EU, initiates projects in all three countries.

RENEWABLE ENERGIES IN THE CONTEXT OF ENERGY SECURITY

Despite the efforts already mentioned, climate and environmental policies are given no priority by the Azerbaijani, Armenian and Georgian governments. However, energy security is a key issue in the context of national security strategies.

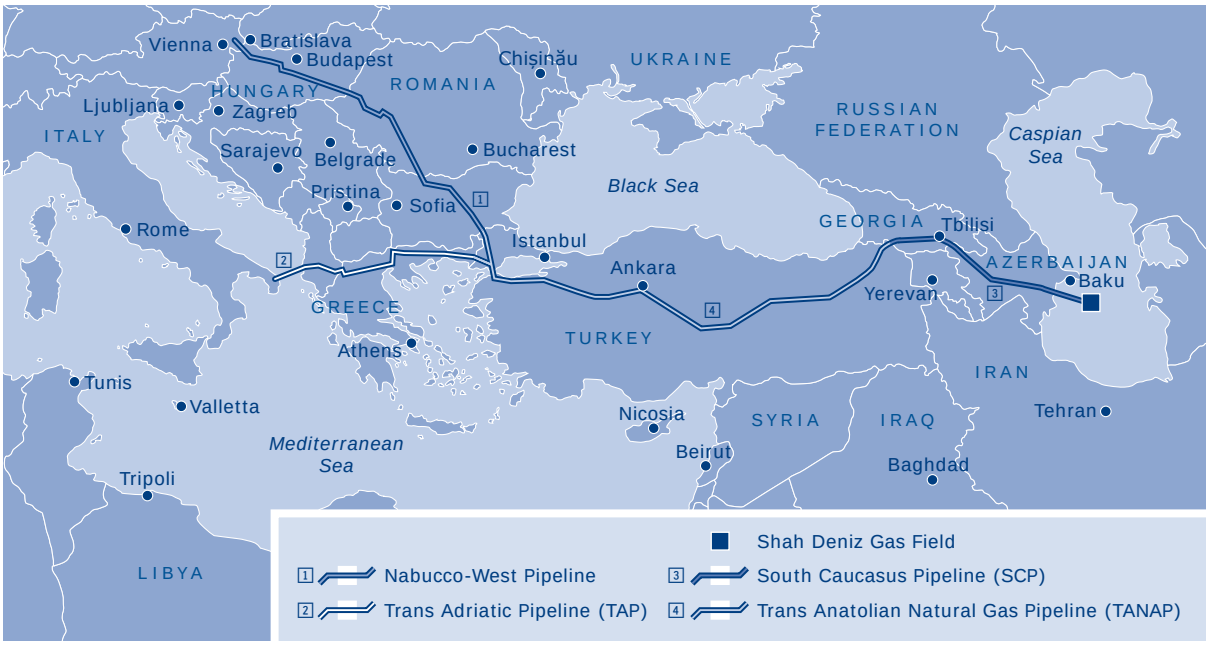
While Azerbaijan focuses on the security of its existing energy infrastructure, Georgia and Armenia primarily consider energy security from the perspective of security of supply. Both Armenia and Georgia experienced severe energy crises after the collapse of the Soviet Union. Many people still vividly remember the frequent power failures and cold nights of the early 1990s. Besides expanding and diversifying trade relations and transport routes, and continuing to develop the energy infrastructure, both countries consider increasing domestic energy production – and hence the greatest possible energy independence – to be a key objective. Renewable energies and especially hydropower are discussed more in relation to their possible contribution to energy security than in the context of reducing greenhouse gases. Georgia is pursuing the objective of satisfying 100 percent of its domestic energy needs with renewable energies by 2025, while also aiming to export green energy to neighbouring countries. Armenia is striving to achieve a renewables' share of 50 percent by 2020.

OUTLOOK

All three countries from the southern Caucasus have considerable potential for development in the area of renewable energies. There is huge untapped potential in the generation of hydropower. Solar, wind and biomass are rarely used at the moment, yet they are particularly suitable as energy sources in the southern Caucasus due to the region's geographical and meteorological conditions.

In order to fully exploit the potential for green energy in the coming years, stronger cooperation between neighbouring countries and an expansion of the energy infrastructure is required. This could

PIPELINES OF THE EU'S SOUTHERN GAS CORRIDOR



Source: Own diagram; © racken.

include cross-border projects in the energy sector[7] and exchange agreements for electricity and fossil fuels. Azerbaijan, Georgia and Turkey already form an axis in terms of their energy policies, while there are existing bilateral agreements on electricity trading between Georgia and Turkey. The two countries are attempting to achieve further-reaching cooperation in the energy sector while also making efforts to expand the cross-border power grid. An integration of Armenia into the regional grid, however, is not expected in the immediate future due to the political tensions and lingering conflicts with neighbouring countries Azerbaijan and Turkey.

Overall, the southern Caucasus could be important not only as a transit corridor for fossil fuels, but also as a trading centre for green energies – if the governments of Azerbaijan, Armenia and Georgia succeed in tapping into the potential for renewables in their countries and integrating climate protection into national legislation. It remains to be seen, however, whether or not there is the political will to make climate protection and renewables a real priority.

7 | Successful examples of regional cooperation in South Caucasus are the BTC and BTE Pipelines. In renewables, both Armenia and Azerbaijan are cooperating with Iran for the construction of hydropower plans in the border regions.

CZECH REPUBLIC

Werner Böhler | Alena Falathová

Whether regular flooding, warm winters and cold summers, or frequently extreme weather conditions that impact negatively on agricultural production, these realities of everyday life in the Czech Republic are making more and more people aware of climate change. However, only a few citizens recognise how urgently necessary it is to take action against climate change and alter personal behaviour.

According to a Eurobarometer survey on climate change,[1] from 2011 to 2013 the proportion of the population that considers climate change to be a global threat fell by five percent to just eleven percent. In terms of the consequences of climate change, the population of the Czech Republic is most concerned about the economic situation (37 percent) and about poverty, hunger and a potential lack of water (22 percent). The Czech Republic is among the countries that attribute a lesser importance to climate policy.

It is noteworthy that 56 percent of Czechs believe businesses and economic sectors are responsible for tackling climate change in the European Union. They feel that the national government has only the second-greatest responsibility, followed by the EU in third position. When compared with Europe as a whole, Czechs are less aware of their own responsibility in the matter and tend to project the responsibility onto external actors. A willingness to personally contribute to climate protection is demonstrated primarily in waste separation, recycling and the purchase of energy-efficient household appliances. The media discourse surrounding climate change in the Czech Republic is still limited to secondary issues. The main focus is on natural disasters, energy policy, a reduction in greenhouse gases and the EU's and UN's climate initiatives. Climate policy as a general concept is certainly not front-page news in the Czech Republic. There are only a few journalists who are familiar with the complex problems of climate change. The scant reporting in the media is one of the reasons that climate policy is not more widely discussed by the general population.

Climate change is slowly starting to become a more important issue in the political arena. All parliamentary parties, with the exception of the right-wing populist party Dawn of Direct Democracy, included environmental positions in their election campaigns,

1 | European Commission, *Special Eurobarometer* 409, "Climate Change", 04 / 2014, http://ec.europa.eu/public_opinion/archives/ebs/ebs_409_en.pdf [28 July 2014].

SURVEY ON THE PERCEPTION OF CLIMATE CHANGE AS A GLOBAL PROBLEM

Question:

"Which of the following do you consider to be the single most serious problem facing the world as a whole?"

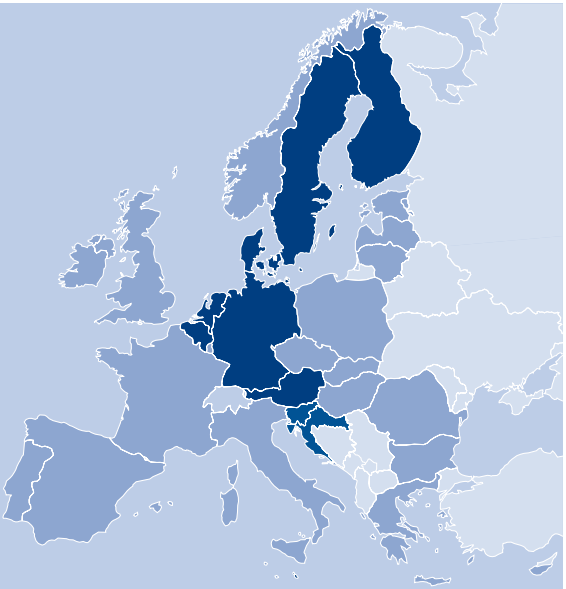
Results:

Among all EU respondents, climate change was the third most widely cited problem. The problems considered to be more serious are (1) "Poverty, hunger and lack of drinking water" and (2) "The economic situation".

Responses citing climate change in the EU28:

- 20 to 100% of respondents
- 15 to 19% of respondents
- 0 to 14% of respondents

Sweden:	39%
Denmark:	30%
Malta:	30%
Germany:	27%
Belgium:	24%
Austria:	24%
Finland:	23%
Netherlands:	20%
Luxembourg:	17%
Slovenia:	17%
EU average:	**16%**
Croatia:	16%
Italy:	14%
France:	14%
Ireland:	14%
Lithuania:	12%
Great Britain:	12%
Slovakia:	12%
Poland:	11%
Czech Republic:	**11%**
Romania:	10%



Source: Own diagram based on Special Eurobarometer 409 (see n. 1).

with most of them explicitly mentioning climate change in this context. The traditional sceptics on the subject of climate policy – the Civic Democratic Party (ODS) and former President Václav Klaus – have lost their political clout. The new governing coalition in the Czech Republic, comprising the Social Democratic Party, the ANO movement and the Christian and Democratic Union, pledged in their government policy statement that they will actively pursue environmental and climate policies. In concrete terms, the government will develop a strategy to adapt its water industry to climate change by 2016 while playing an active role in formulating EU energy and climate policies. Emphasis will be placed on the competitiveness of the economy. At the international level, the government will pledge its support to amendments to the Kyoto Protocol and other such climate protection measures that contribute to adaptation.

Climate protection is generally only considered in Czech politics in the context of energy policy, with economic interests at the forefront. The manufacturing industry generates around a third of the country's GDP, making its industry's share of GDP one of the highest among all EU member states. It was with this in mind that the government's coalition agreement was drawn up to include a great number of climate policy instruments that should have a positive effect on the Czech economy. These include the new law aimed at reducing the country's dependence on fossil fuels and the amendment to the law that promotes renewable energy. The government also hopes to improve the energy efficiency of electrical devices step-by-step while increasing energy savings through EU funding programmes for thermal insulation. The Czech government is preparing an updated national energy concept that focuses on diversifying energy sources in order to reduce dependency on a single source. Nuclear energy constitutes a significant share of the energy mix. Discussions are being held regarding an expansion of the Temelín nuclear power plant and a modernisation of the Dukovany nuclear power plant. Both projects have stumbled so far due to their lack of financial viability, which is why state energy supplier CEZ is demanding that the state guarantee minimum purchase prices.

In relation to energy policy, Germany's energy transition was viewed negatively by people in the Czech Republic. They did not consider it a viable option for their country. Since the massive subsidies for renewable energies from the German federal government were insufficiently communicated to neighbouring Czech Republic, the Czech energy grid was overburdened on several occasions when German renewable energy was looped into the Czech grid lines as those between northern and southern Germany had reached their carrying limit. The Czech government therefore aims to build power transformers on the border with Germany in order to be able to interrupt the energy supply from Germany if there is a threat of blackout.

The Dlouhé stráně pumped storage plant is the largest of its kind in the Czech Republic, boasting a bottleneck output of 650 megawatts. The elevated reservoir is 1,350 metres above sea level.

Another potentially problematic subject for German-Czech relations is the introduction of capacity markets. As a reaction to the energy transition, voices in Germany are calling for the state to dictate to electricity companies how many power plants they should operate (e.g. coal-fired power plants) while paying a fixed amount for them. The Czech government is very sceptical towards such a guaranteed pricing system, as its views a set definition of energy sources as directly or indirectly restricting the country's flexibility. It is against this backdrop that they are keenly following the discussions in Germany.

At the European level, the Czech Republic maintains a rather non-committal position. In the negotiations over the framework for energy and climate policies until 2030, the Czech Republic favoured an introduction of a Europe-wide goal to reduce greenhouse gases by 35 percent. It supports a target share of 24 percent for renewables, while remaining very sceptical about the idea of setting common targets for energy efficiency. Moreover, it believes individual member states should be able to decide for themselves which methods they use to achieve these goals. The Czech Republic also promotes burden sharing between EU ETS and non-EU ETS sectors, whereby GDP, the intensity of member states' efforts and industry's share of GDP are taken into account.

Overall, the Czech Republic is seen as one of the countries that endorse climate protection and a gradual transition to a low-carbon economy. What is lacking, however, are both ambitious political initiatives and the successful implementation of initiatives already under way. Climate policy is always subordinate to the interests of the economy and the country's energy security. An active fight against climate change is overshadowed by the importance accorded to climate change adaptation. EU initiatives are the main engine for more ambitious climate policies.

HUNGARY

Frank Spengler | Mark Alexander Friedrich

HUNGARY: ENVIRONMENTAL POLICY GAINING IN SIGNIFICANCE

Climate change and its consequences are not among the subjects that are afforded high priority in Hungary's public discourse. Although the topic of energy is important, the population is interested primarily in issues of price and security of supply rather than matters of sustainability. After the fall of the Iron Curtain, finding solutions to everyday problems was more important than environmental protection, both in politics and within society. Hungary was therefore late in addressing climate change. The discussion was also generally initiated at the state level rather than by civil society. At the political level and in the media, the focus of recent years has mostly been on how Hungary can become independent from Russian gas and diversify its energy supply. However, the government has committed to climate protection at the international level and set up national institutions to address sustainability issues. The green-liberal party LMP won seats in the Hungarian National Assembly for the first time, which points to the growing importance of environmental issues within society.

INSTITUTIONS FOR SUSTAINABILITY AND THE LEGAL FRAMEWORK

In 2013, Hungary released the Second National Climate Change Strategy 2014–25 with Outlook until 2050, which presented the consequences of climate change for Hungary and the measures necessary

to address these impacts. According to the report, Hungary will in particular be seriously affected by the expected climate change due to its geographical characteristics. This will apply particularly to the already disadvantaged regions of the country. The report also says that agriculture can expect longer dry periods, as already seen in recent years. It also recommends that the government should incorporate these developments into its policy measures. Alongside the country's climate change strategy, a National Framework Strategy for the Sustainable Development of Hungary was prepared, which covers energy security as well as energy savings.

At the institutional level, the Hungary's Ombudsman for Future Generations is without precedent anywhere in the world. Through the Ombudsman for Fundamental Rights the office can initiate legal proceedings and play an active role in investigations, while also having the authority to monitor the implementation of the sustainable development strategy and submit recommendations during the drafting of legislation that may affect the rights of future generations. Its mandate also includes guaranteeing that natural resources remain the common heritage of the nation and ensuring that current legislation sufficiently protects the rights of future generations.

Hungary's new constitution, which went into effect in 2012, also includes sustainability criteria. The Constitutional Court established in its ruling that the basic human right to life and human dignity obliges the state to protect the living conditions of future generations. Hungary also has a Council for Sustainable Development in which ministries, state administrative agencies and NGOs are represented. It is an advisory body of the Hungarian parliament for the long-term development of policies concerning the values and interests of future generations.

HUNGARY'S ENERGY NEEDS AND ENERGY SECURITY POLICY

Hungary's energy supply currently rests essentially on two pillars: gas imported mostly from Russia and nuclear energy from a Russian-type nuclear power station close to Paks in central Hungary. The government's aim is to reduce its gas dependency in the coming years. The expansion of the Paks nuclear power plant was therefore scheduled for the beginning of 2014 with Russian cooperation. The Russian company Rosatom plans to add two 1,200-megawatt reactor units to the plant. It is operated by Hungarian state power company MVM and currently produces 1,860 megawatts of electricity, thus meeting around

The Hungarian puszta is a steppe with scarce vegetation and a pronounced continental climate.

37 percent of the country's electricity needs. The first new unit is expected to be operational in 2023. The government's main objectives in this project are to diversify the energy supply and increase security of supply.

The expansion plans were only discussed at a very basic level in the media, and mostly before the national elections on 6 April 2014. Critics cite the current Ukraine crisis to suggest that a cooperative project with Russia will not increase security of supply. The government points to the fact that the only Hungarian nuclear power station was built by Russia. They claim it to be a big success and argue that the new nuclear reactors would then be owned by Hungary. They also argue that the proposed expansion could reduce the dependency on imported raw materials from Russia. Critics point to the nuclear phase-out in Germany. In this context, it has also been discussed as to whether one of the two countries is making a costly mistake. This shows that Hungarians are largely aware of Germany's energy transition and its nuclear phase-out. However, the majority of Hungarian politicians do not regard a similar approach as a viable option.

The aim of reducing Hungary's dependency on imports also serves as a strategic means for the government to buy up any subsidiaries of foreign energy companies that are based in Hungary. This was the case with a subsidiary of German energy supplier Eon. This strategy is not without risks, as any future modernisation of the infrastructure would have to be carried out without foreign capital and without the expertise of experienced western companies.

Renewable energies are currently underused in Hungary. However, the government wants to increase their share of total energy consumption to 13 percent by 2020. In addition to biogas, Hungary is also banking on geothermal energy due to the suitable local conditions. However, the current feed-in tariffs are too high to offer any real incentive to use renewables. The government's focus in the past four years has been on reducing consumer prices and developing expansion plans for the Paks nuclear power plant. For the new legislative period, there is still hope that the focus of energy policy may shift partly towards sustainable energy sources, while also providing the necessary financial incentives.

EUROPE'S ROLE IN HUNGARIAN ENERGY POLICY

The European Union is an important factor in Hungarian climate policy. Between 2007 and 2013, the European Commission provided €4.9 billion in convergence funds. According to the Hungarian government, the EU funding from the 2014–20 financing period will be used to increase energy efficiency and improve the water infrastructure and waste management. The targets laid out in the EU's Europe 2020 strategy give Hungary an incentive to develop sustainability measures.

The key factors in being able to meet the EU's sustainability targets are energy efficiency and the potential for energy savings both among consumers and within industry. Almost 70 percent of the four million apartments and most of the public buildings do not satisfy modern functional and thermotechnical requirements. The old prefabricated concrete slab apartment blocks need to be renovated, while the outdated power plants and power grids require modernisation. The energy efficiency of Hungary's industry has significantly improved since the fall of the Iron Curtain, most significantly in recent years, but has yet to reach the levels achieved in the western European countries. Although Hungary does compare favourably to other countries in the region, it still requires more energy than western countries to achieve the same amount of economic output. This is especially relevant when one considers the competitiveness of energy-intensive sectors such as chemicals or metalworking. Hungary's aim is to achieve energy savings of ten percent by 2020.

HUNGARY AND MULTILATERAL CLIMATE POLICY

Hungary assumes an active role in multilateral climate policy. On the one hand, Hungary has held conferences on climate policy and sustainability in recent years, while on the other hand, it is Co-Chair, alongside Indonesia, of the United Nation's Open Working Group on Sustainable Development Goals (SDGs). This working group comprises 30 states and is tasked with developing SDG-related proposals, which are then presented to the General Assembly. The focus area document was recently adopted and will serve as the basis for future work.

Hungary places a great deal of emphasis on drinking water. The country has an exceptionally large number of ground water resources and is finally becoming more and more aware of this asset. The National Water Strategy, which was adopted in 2013, is designed to oversee the safeguarding and sustainable use of this geographical advantage. It will also be important in this context to guarantee that the strategy will cover all of those people who still have to live without a secure supply of drinking water, modern sewage systems or a functioning waste disposal system. At the international level, Hungary has excelled in the field of water supply, an example being the Budapest Water Summit held in October. Organised together with the United Nations and in cooperation with the WWC, state representatives and experts spent three days discussing issues surrounding future water management based on the results of the Rio+20 Conference.

CONCLUSION

The public debate on climate change and related issues is not as widespread in Hungary as in many other European countries. There are many signs, however, that Hungary is becoming more aware of its responsibility. The various international conferences, its activities in the SDG working group and the newly created institutions at the national level testify to this. Guaranteeing energy security and diversifying energy supply are currently two other matters of key importance. The controversial expansion of the nuclear power plant in Paks in cooperation with Russia is also still being discussed. Renewables, primarily geothermal and solar energy, should be promoted as a way of diversifying supply away from gas and oil and as a means of making Hungary less dependent on traditional energy sources. This will ultimately contribute to environmental protection.

UNITED STATES OF AMERICA

Lars Hänsel

Since the Obama administration took office in January 2009, climate policy in the United States has been through many ups and downs. Obama announced in his election campaign that he would make the passing of high-profile, comprehensive climate legislation one of his main objectives from the start of his first term and would push it through Congress. His efforts in this matter failed, and ever since the Senate rejected Obama's proposal, climate policy became a politically sensitive subject and largely disappeared from public debate.

For about a year now, however, the public as well as Congress and the administration are showing new interest in climate policy. A series of studies have been published in recent months that have received the support of both advocates and opponents of a strong climate policy. Interest groups have invested large sums of money – on television advertisements, for instance – to win the public over to their respective positions on climate change. At the same time, the existence of climate change is a highly contentious issue among the public. A study published by the American Association for the Advancement of Science in March 2014 found that most Americans consider climate change to be a scientifically disputed thesis. However, a change in thinking with regard to recognising anthropogenic climate change seems to be taking place among younger generations. A survey by the Pew Research Center in March 2013 shows that only 28 percent of US voters aged 65 or older believe in CO_2-induced global warming, while the same figure among voters 50 years or younger is almost 50 percent.

There have also been several heated debates in Congress. On 7 April 2014, the Democrats initiated a 30-hour discussion on climate change in the Senate. It cannot be ruled out that climate policy will again play a larger role and become a key issue in the mid-term elections in November 2014 and the presidential elections in 2016.

OBAMA'S CLIMATE INITIATIVE

What has triggered this new interest in climate policy? President Obama gave fresh impetus to the issue with a speech in July 2013 at Georgetown University. This was the president's first big speech on climate policy during his second term since his State of the Union address, and gave him the chance to not only set out his priorities for his second term, but also to clarify how he wants to achieve his objectives. It is important to note that while the speech revived the debate on climate policy in the United States, its intention was not to provide a comprehensive vision of US climate objectives. It was more intended as an opportunity to announce the plans he had for using administrative actions to move forward on climate policy. It became clear from the speech that the president no longer envisages congressional cooperation in the legislative process, and that he plans rather to circumvent Congress wherever possible. The president also emphasised in his speech that climate policy will continue to be a top priority of his and that he intends to use his remaining time in office to take concrete steps in this matter in order to leave a positive legacy.

The California-based company Tesla Motors is a pioneer in e-cars and electric drive trains. It started its series production of emissions-free sports cars in 2008.

The objectives are threefold: the reduction of CO_2 emissions, preventive measures to mitigate the impacts of climate change and, above all, the United States taking a leading role in energy policy, specifically by improving energy efficiency and by increasing the use of clean and renewable energies. Obama's stressing of the medium-term positive effects for the economy and the environment from using natural gas as an energy source provided further political support for the rapidly increasing production of this energy source.

With regard to the reduction in greenhouse gases, the Obama administration set itself the ambitious target of a reduction of 17 percent by 2020 and a reduction of 83 percent by 2050, based on 2005 levels.

This turns the spotlight on coal-fired power plants because they represent the largest source of greenhouse gases in the United States. Obama therefore introduced a new Clean Power Plan through the Environmental Protection Agency on 2 June 2014. This plan will establish new regulations for CO_2 emissions from coal-fired power plants and reduce them by 30 percent by 2030. In addition to the reduction of fine particle air pollution, the costs of electricity are expected to fall by eight percent. After a period of public debate over the plan, binding regulations are expected to be in place from June 2015.

The plan also requires the US federal states to submit their implementation plans by 2016, but gives the individual states flexibility in how they achieve their climate goals – either by shifting emphasis to renewables and nuclear energy, by increasing energy efficiency or by introducing a market for renewable energy certificates.

There are already regional markets for renewable energy certificates in California and in a bloc of states in the northeast of the United States, which will now become more attractive to other states interested in following suit. This has shown that the federal states can assume a leading role in combating greenhouse gases.

Whether or not the plan will actually be implemented successfully or not is yet to be seen. Most Democrats in Congress support the plan, though the plan faces resistance not only from Republicans but also from Democratic legislators from coal-mining states. Congress has the option of limited funding for the Environmental Protection Agency (and other government agencies) through the budgetary process, a move that would at the very least impede the plan's implementation.

THE MILITARY'S ROLE IN CLIMATE POLICY

Interestingly, the Pentagon could increasingly become an important catalyst for US climate policy and for its international commitments on climate change. A new study by the CNA Corporation's Military Advisory Board reveals that the climate change-induced droughts in the Middle East and Africa have exacerbated resource-related conflicts and ethnic tensions, thus suggesting that climate change has intensified

Flexible solar panels on US Army tarps at Camp Lemonnier in Djibouti. These enable the unit to generate the energy it needs to operate fans, radios and lighting.

the risk of global instability. In March in another report (Quadrennial Defense Review), the US Defense Department found a direct link between climate change and terrorism. The report concluded that climate change intensifies poverty, environmental problems, political instability and social tensions and hence contributes to creating the conditions conducive to terrorist activities and other forms of violence. Climate change is thus seen as a significant threat to national security. This assessment faces stark criticism from opponents who consider threats to national security to come more from conventional areas.

At the same time, the US military has invested huge sums in the research and development of solar energy, not least to safeguard the armed forces' future energy independence. To this end, construction recently began on a 27.5-hectare solar installation in Arizona.

GERMANY'S ENERGY TRANSITION

Significant interest in Germany's energy transition has come largely from policy making circles, but misconceptions continue to surface time and again. The energy transition is frequently associated with the Fukushima disaster and is seen as an irrational panic reaction. Also, it is frequently overlooked that Germany has a long history of resistance to nuclear energy and that the decision to phase out nuclear power was taken long before Fukushima. The nuclear phase-out is primarily seen as an ideologically driven decision that fails to adequately weigh economic and strategic consequences, while not being sufficiently guided by economic and strategic considerations. One frequent criticism is that Germany is becoming too dependent on Russian national gas supplies as a result of its energy transition. These critics now feel especially vindicated by the events in the Ukraine.

INTERNATIONAL CLIMATE POLICY

The United States works with international partners in the field of climate policy. The Obama administration is currently working towards the goal of making the 2015 climate summit in Paris a success. In explaining the US's position in May 2014, chief negotiator Todd Stern said that the United States recognises the complexity of the situation with regard to the many national interests and that it has therefore compiled a list of "nationally determined contributions" that demands different contributions from each country based on their respective capabilities. At the same time, Stern said that the United States will not check the commitments to ensure that they represent a significant contribution to reducing climate change. He also vehemently rejects "shared but differentiated responsibilities", whereby developing countries are not subject to strict climate targets.

In addition to this multilateral context, the United States is also working bilaterally with other states – not least to support the multilateral efforts and to increase the involvement of developing countries in climate policy. Although the country signed the Kyoto Protocol in 1997, it has not ratified it, thus suggesting that the protocol is not binding for the countries who are the largest emitters of climate gases. This particularly applies to China and India, which are seen as the states that have the greatest influence on climate change. The United States is working towards a harmonised climate policy with these countries, especially in the hope of providing the basis for a successful climate summit in Paris.

In April 2013, US Secretary of State John Kerry agreed to set up the Climate Change Working Group in cooperation with China to deal with a range of subjects, including the reduction of exhaust emissions from heavy goods vehicles, CO_2 storage, energy efficiency in buildings, improved data collection of climate gases and smart grids.

The United States, which has been working with India since 2009 in the Partnership to Advance Clean Energy (PACE), supports the development of renewable energies in the south Asian nation. In 2012 and 2013 alone, the expansion of India's solar capacity received US funding to the tune of US$2 billion. There is also cooperation with Indian oil and gas companies and in open-cast coal mining regarding the capturing of methane gases.

Whether these efforts will help make the 2015 climate summit in Paris a success – and whether the United States will then sign a new protocol – remains to be seen. Should it sign the protocol, however, Congress could very well block ratification again.

CONCLUSION

On the whole, climate policy is currently a high priority once again and will remain a matter of great importance for the remainder of Obama's second term. But given the political realities, the prospects of success are limited. Since current polls give the Democrats virtually no chance of gaining control of the House of Representatives in the mid-term elections in November 2014, the prospects of legislative initiatives finding support in Congress are very slim. The president will therefore continue to push through his climate policy by administrative means. The United States is currently taking significant steps towards clean energy, especially through an increased use of gas in energy production and the further restriction of coal-fired power plants. It is striving to make the upcoming UN Climate Change Conference in Paris a success, not least by securing the support of developing countries for the implementation of a stricter climate policy.

Furthermore, the debate surrounding the use of gas, in particular shale gas, is of key strategic importance in the United States.

THE MIDDLE EAST AND NORTH AFRICA

ALGERIA

Hardy Ostry | Marie-Christine Roux

The Hassi R'Mel hybrid power plant in the Algerian province of Laghouat combines a solar thermal plant with a conventional combined cycle gas turbine.

Due to its particular geographical features and location on the Mediterranean, Algeria is among the countries hardest hit by the impacts of climate change – even though it only accounted for a very small share of global greenhouse emissions between 2009 and 2013, at 3.3 tonnes per person.[1] Algeria was ranked 96th on the Global Climate Risk Index 2014[2] and categorised as a country at risk in the Climate Change Vulnerability Index 2014.[3] With a coastline stretching 1,200 kilometres and territory consisting of 87 percent desert, Algeria is vulnerable to both rising sea levels and the spread of the Sahara. Experts such as Mohamed Senouci, a member of the IPCC, and Dahmane Boucherf, from the Algerian Centre of Climatology, also warn of an increase in temperature of between 1 and 1.5 °C and a drop in rainfall of up to 20 percent over the next six years, which could cause problems for agriculture and water supplies while having a negative impact on health and tourism. Following the publication of the IPCC's Fifth Assessment Report, the media in Algeria addressed this warning, reporting on the conclusions and observations of the international panel and calling for the Algerian government to take action. However, due to the tense election campaign going on at that time and the extremely controversial re-election of Abdelaziz Bouteflika, it barely had an impact up against the numerous reports, analyses and comments on the election. Nevertheless, the topic remains as relevant as ever for the future and the government must tackle this issue more intensively and join forces with civil society, which is already very active.

In the past, there has been no lack of political rhetoric that has at the very least paid lip service to the key importance of these issues. At the UN Climate Change Conference in Copenhagen in 2009, Algerian President Bouteflika pointed out that "the worsening of climate change – a phenomenon recognised by all – means we must make this issue a top priority". As early as 2000, Algeria, which has been a member of the UNFCCC since 1993, set up the Ministry for Regional Development and the Environment. This ministry was tasked with developing and implementing a national environment strategy (Stratégie Nationale Environnementale) and a national action plan for the environment and sustainable development (Plan National d'Actions Environnementales et du Développement Durable). This strategy and action plan also involved dedicating numerous agencies and specific funds to environmental protection and climate change. Interestingly, in addition to the national institutions (such as the National Agency for Climate Change), new and decentralised offices were set up to include the regions in this process. Directorates for the environment in the wilayahs (administrative districts), for instance, are responsible for ensuring efficiency and communication with the local population, while the regional energy inspection bodies are charged with carrying out checks. Alongside measures at the institutional level, the government has also enhanced the legislative framework by using either international or national instruments. In line with this approach, Algeria ratified the Kyoto Protocol in 2005 and has drawn up framework laws and legal codes in the past few years, such as the legal code regarding bodies of water. Today, the government is striving to fully integrate environmental protection measures into its policies. The European Union's climate change adaptation programme, which runs until the end of 2014, should be able to provide Algeria with support in this endeavour. Environmental protection is also one of the areas that has seen huge investment. In the past few years, the country has directed funds in particular towards measures to create access to drinking water, regulate the use of pesticides and manage marine resources more responsibly. One of Algeria's flagship projects is a very ambitious five-year plan that aims to combat desertification in twelve wilayahs in cooperation with environmental protection associations. The showcase projects also include a programme to protect the Algerian coast, which will receive €34 million in funding from the EU.

1 | For comparison, carbon emissions for the same period were 9.1 tonnes per capita in Germany and 13.7 tonnes per capita in the US. The World Bank, "CO_2 emissions (metric tons per capita)", http://data.worldbank.org/indicator/EN.ATM.CO2E.PC/countries [28 July 2014].

2 | Sönke Kreft and David Eckstein, *Global Climate Risk Index 2014. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2012 and 1993 to 2012*, Germanwatch, 11/2013, http://germanwatch.org/en/download/8551.pdf [28 July 2014].

3 | Maplecroft, "Climate Change Vulnerability Index 2014", 2013, http://bit.ly/1km88bB [28 July 2014].

Despite a certain level of engagement from the Algerian state, the country still performs relatively poorly when it comes to concrete results. The Environmental Performance Index 2014[4] ranked Algeria 92nd out of 178 countries. Algeria's poor ranking is caused by a number of factors, such as its bad performance in energy policy and security matters. Indeed, one of the greatest obstacles facing Algeria will be to switch from an energy production model and an energy policy primarily based on fossil fuels[5] to an approach that favours green energy, while still being able to meet the Algerian population's growing energy requirements. In the past few years, the leadership in Algeria seems to have gained a greater awareness of the need to look beyond fossil and non-renewable energies as the basis of Algerian energy policy. Within the government and parliament, decision makers and lawmakers have begun not only to discuss the post-crude oil era, but also to make considerable investments in renewable energies. According to the energy ministry, the level of investment in this sector will have risen from US$60 billion to US$100 billion by 2030 in order to achieve an energy production capacity of 36,000 megawatts. Algeria has great potential to produce solar power and is thus particularly focusing on installing photovoltaic systems. An example of this new political direction is the agreement reached in 2011 between the public company Sonelgaz and the Desertec Foundation. This EU-funded project plans to build 60 solar thermal and hybrid power plants by 2020. Algeria aims to ensure that green energy makes up around 40 percent of its total energy production by 2030. The various measures and support schemes for renewable energies will also be accompanied by changes to legislation. In May 2013 the regulatory body for gas and electricity announced that it would soon be adopting a number of new rules and regulations. However, these many projects have yet to go beyond the initial planning stage. Furthermore, the real "fly in the ointment" of Algeria's green transformation is its current economic model, which is still dependent on hydrocarbon production. In addition to this, despite the urgent need to switch to clean energy sources, Algeria wrongly believes that its recently discovered shale gas reserves will guarantee its energy security in the long term. This has stalled changes to economic and energy policy. It remains to be seen how the re-election of President Bouteflika will impact the development of Algeria's climate and energy policies.

Nevertheless, gaining public acceptance for renewable energies will be problematic, as production costs for renewables are initially far higher than the products that receive massive state subsidies – due in no small part to the considerable revenues generated by exporting hydrocarbons. As long as the state subsidises traditional rather than renewable energies, we are unlikely to see a turnaround in public behaviour, in spite of the numerous campaigns to raise awareness. Although there is general recognition of the merits of the German energy transition, it is not portrayed as a model for Algeria. Experts believe that the costs involved in putting the German example into practice would be too high for the population and that renewables would also fail to meet Algeria's rising energy needs.

This attitude to the German energy transition is also evident from Algeria's stance on the international stage. On the one hand, Algeria supports and advocates joint action to keep climate change in check.[6] On the other hand, like most "developing" countries, Algeria accepts only minimal responsibility for this phenomenon and asks the countries it holds responsible from a historical perspective for support in the form of funding and technology transfer. In addition, it demands a relaxation of the regulatory mechanisms with which industrial nations must comply. Algeria views the United Nations as a key player in this process and is particularly active within UN forums, as well as externally in cooperation with UN institutions at the national level.

4 | The Yale Center for Environmental Law & Policy and Center for International Earth Science Information Network, "2014 Environmental Performance Index. Country Profile Algeria", Columbia University, http://epi.yale.edu/epi/country-profile/algeria [28 July 2014].

5 | 96 percent of electricity currently produced in Algeria comes from natural gas.

6 | At the Climate Summit in Copenhagen, African countries, led by Algeria, strongly opposed considerations to abandon the Kyoto Protocol (the only legally binding agreement), accusing industrialised nations of "killing Kyoto".

GULF STATES (KUWAIT, BAHRAIN, SAUDI ARABIA, QATAR, OMAN, UNITED ARAB EMIRATES)

Gidon Windecker

SUSTAINABLE CLIMATE POLICY – NECESSITY, OPPORTUNITY OR THREAT?

For many years, the Gulf states staked everything on one card: prosperity through oil and gas exports. During this period, their dependence on fossil fuels and uncontrolled growth has had an adverse impact and resulted in the monarchies in these states being labelled as polluters. The Arabian Gulf has both the highest energy and water consumption and the highest level of carbon emissions per capita in the world. This places all of the Gulf states among the top 15 polluters worldwide. Public debate has rarely addressed environmental protection to date, and few people see any advantage in engaging in such a discourse. The rapid modernisation process in the Gulf states has come with a range of side effects, such as excessive carbon emissions caused by energy production, water and soil pollution, a loss of biodiversity and air pollution caused by construction and transport. These side effects are showing the Gulf monarchies where the boundaries of sustainability lie. In order to understand why the monarchies here have frequently stalled global climate policy in spite of the dramatic negative impact of their actions, it is essential to explain the role of oil and gas in the region.

The six member states of the Cooperation Council for the Arab States of the Gulf are home to more than 30 percent of all oil and 20 percent of all natural gas reserves in the world. Fossil fuels are not only their main industry (50 percent of their total economic output), accounting for most of the national budget (90 percent); they also help ensure political stability. The environment loses out to economic gain, which enables the ruling dynasties to provide their populations with support in the form of financial subsidies, and hence maintain power. Generous social security benefits and wages for civil servants as well as subsidised energy and water supplies make up the pillars of the social contract between the government and its citizens. As a result, binding climate protection agreements and the resulting reduction in global oil and gas consumption pose both an economic and a political threat to these countries. For precisely this reason, the Gulf states have blocked any attempt to reach binding agreements at international climate negotiations to date.

However, on the other hand, climate change poses serious threats to the Gulf states. The countries in the region already face extreme heat and drought in the summer and are also located in low-lying areas. Climate change will exacerbate the region's already extreme climate, causing increased desertification, diminished rainfall, lower ground water levels and higher salinity. The little arable land there is will become arid – and last, but by no means least, the rising sea level will put the densely populated coastal regions at risk. These dangers make it essential for the Gulf states to rethink their strategy and take a more open-minded approach to sustainable climate policy.

That said, the slow transition towards a progressive climate policy does seem to have made some inroads into the ruling dynasties in the Gulf. They have realised that climate protection is also in their national interests and have started to acknowledge the need for sustainable climate policy. Unlike in Europe, this awareness is not primarily rooted in moral and ethical considerations. Instead, it is purely driven by rational and pragmatic motives. The Gulf states are faced with a loss of biodiversity, threats to food security, health problems due to extreme heat and increasingly frequent sand storms, and energy policy challenges caused by the rapid increase in electricity consumption (which is set to almost double by 2020, to more than 850 terawatt-hours). All this makes developing a sustainable and diversified climate policy an absolute necessity. Failure to do so would mean that current power plant capacity would no longer be sufficient and high opportunity costs would arise, as it would no longer be possible to sell gas and oil at current levels on the global market. Instead, these resources would have to be used within the countries themselves. Rapid population growth in the region will only fuel this trend.

The future lies in alternative energy sources such as solar power, but nuclear energy is also a much-discussed option in the Gulf states. Qatar plans to commission a solar power plant with a capacity of 3,500 megawatts in 2015, the United Arab Emirates (UAE) has contracted South Korea to build four nuclear power plants and Saudi Arabia is taking a similar route. However, too many people are still blinded by convenience and the easy profit generated by the oil and gas industry. Awareness for the problems of

climate change is growing nonetheless: according to a survey conducted by the Arab Forum for Environment and Development, 83 percent of people living in the Gulf region believe that climate change poses a serious threat to their country. Yet only 37 percent of people surveyed think their government is taking sufficient action to combat climate change, while 44 percent say they are not satisfied with their government's response to this problem.

For the first time, Qatar, the UAE and Saudi Arabia showed a surprising openness to reach a compromise on binding emissions targets at the international level during the 2012 UN Climate Change Conference in Doha (COP18). The countries in the Cooperation Council for the Arab States of the Gulf can be divided into two groups on the basis of their attitudes to climate change: the more progressive UAE and Qatar, on the one hand, and Saudi Arabia, Bahrain, Oman and Kuwait, who block progress, on the other.

The UAE and Qatar market themselves as pioneers of green energy in the Gulf. Due to their small populations and high income per capita generated by oil and gas exports, both states have the necessary means to diversify their economies and effectively communicate this process to the public through image cultivation and public diplomacy. The UAE played an active role in the Cartagena Dialogue, an informal alliance of ambitious industrial and developing countries that observers believe helped pave the way for the surprisingly positive outcome of the climate negotiations in Cancún. At first glance, Qatar may not seem to be quite as progressive as the UAE, but it is making a constructive contribution behind the scenes. The bid to host the UN Climate Change Conference and the focus of the event in Doha at the end of 2012 (COP18) illustrates the country's growing interest in the topic of climate change. On the one hand, the conference drew the attention of the international community to Qatar's climate policy; on the other hand, the host had a major stake in ensuring the negotiations were successful.

The UAE and Qatar's increasing openness to climate policy-related matters can be explained by the fact that the UAE is the least dependent of all the Gulf states on oil revenues and already has the most diversified economy, while Qatar primarily exports natural gas, which is far less damaging to the environment than oil. Both Gulf states now appear to view climate protection as an opportunity to make their mark and develop new lines of business. This has resulted in prestigious projects which have attracted huge media interest, such as Masdar City in Abu Dhabi and the headquarters of the International Renewable Energy Agency (IRENA) – also located in the UAE capital – as well as investments made into research and development in the green economy and climate science. One example of this is the Centre for Climate Research in Doha, which was launched during the COP18 in cooperation with the Potsdam Institute for Climate Impact Research in Germany. Qatar aims to source 20 percent of its energy supply from renewable energies by 2024, while Abu Dhabi plans to achieve a renewables' share of 7 percent and Dubai 5 percent by 2020. In comparison, the Saudi stance is dominated by the fear that oil will be made the main culprit in the climate debate. This has led to demands for oil-exporting countries to receive compensation for the economic losses caused by climate regulations. Bahrain, Oman and Kuwait share the Saudi view.

Qatar produces liquefied petroleum gas and synthetic fuels.

In spite of the progressive signals from the UAE and Qatar, the Gulf states still show an overall reluctance to accept the measures of the UNFCCC. There is a lack of a coherent national – let alone regional – climate strategy. At the end of 2013, no country in the Cooperation Council for the Arab States of the Gulf could claim to have implemented cross-sector climate targets and an adaptation strategy. In order to secure their future, the Gulf monarchies will have no choice but to reorganise their economies to ensure the prosperity of their subjects. In the long term, however, this will only be possible by developing knowledge-based, low-carbon societies.

ISRAEL

Evelyn Gaiser

ISRAELI CLIMATE POLICY: ENERGY SECURITY IN THE SERVICE OF CLIMATE PROTECTION

The main symptoms of climate change in Israel are a drop in rainfall and an increase in extreme weather events. This densely populated, arid country is characterised by continuous population and economic growth, resulting in ever-increasing energy consumption.

Since 1987, the Ben-Gurion National Solar Energy Center in the Negev Desert has been researching technology to harness solar energy – such as parabolic reflector systems.

CLIMATE POLICY MEASURES

The year 2009 saw a change in Israeli climate policy. At the climate summit in Copenhagen, Israel pledged to cut its projected rise in greenhouse gas emissions by 20 percent by 2020.[1] It subsequently adopted a series of measures, the most striking of which was the National Greenhouse Gas Mitigation Plan, which involves initiatives in the areas of energy efficiency, green building and environmental education. In addition, in 2011 the cabinet reaffirmed its decision from 2009 to source ten percent of Israel's electricity from renewable energies by 2020. An interim goal of five percent was set for 2014.

1 | The OECD observes that even if Israel managed to cut the forecast level of greenhouse gas emissions for 2020 by 20 percent, this would still mean more greenhouse gas emissions overall as the target is only to reduce the increase.

In March 2013, Netanyahu won a third term in office. The new minister for environmental protection, Amir Peretz (HaTnua), has shown great commitment to his role and, like his predecessor Gilad Erdan (Likud), has a reputation for being a "doer". In 2013 nearly half of Knesset seats were won by new members. Many of them have an open-minded attitude towards climate policy issues.

Introducing sustainable climate policy in Israel is, however, a difficult task, as Israeli political culture is very much shaped by a short-term, improvised approach to trouble-shooting. This mindset has its roots in the collective experience of being a nation of immigrants. In Israel, it is not only the individual who struggles to get through day-to-day life; the state as a whole must fight to survive.

Climate protection often falls by the wayside when up against issues related to security and financial policy. Over the last few years, immediate security threats (attacks from Islamist groups from the Gaza Strip, increasingly frequent and often fatal attacks on Israeli citizens in the West Bank, the volatile situation in the surrounding Arab states and Iran's nuclear programme), the new budget adopted in 2013 and struggles for greater social justice have dominated public debate and made it difficult to draw attention to the importance of a coherent climate policy. These priorities are also reflected in local media coverage, which rarely addresses climate policy issues.

The new national budget adopted in 2013 saw numerous cuts, which also affected climate protection. The suspension of the National Greenhouse Gas Mitigation Plan and deferral of further funding until 2016 was a serious setback in the fight against climate change. According to calculations made by the Ministry for Environmental Protection, the programme could have cut annual greenhouse emissions by 450,000 tonnes by the end of the decade. Overall, levels of state spending for environmental and climate protection are far below those of other departments, such as defence.

Another key problem facing environmental and climate protection is that responsibility for this area is shared across many different ministries. As a result, climate-related initiatives often lack coherence. An integrated and comprehensive strategy to adapt to

and decelerate climate change is required if Israel is to boost its capacities in this area and ensure that its actions have an impact on the consequences of climate change.

Following the commitments made in Copenhagen in 2009, progress has been achieved in the area of environmental legislation. However, one of the main criticisms levelled at Israel is that it has been too slow to implement these measures on all levels.[2]

ENERGY AND CLIMATE CHANGE

Public debate on energy-related issues in Israel is mainly linked to economic and security policy matters. Being energy-independent is a key geostrategic goal for the Jewish state because the majority of the energy-exporting nations are hostile to Israel.

While the Israeli Ministry for Environmental Protection and the large number of environmental NGOs active in the field are working towards linking energy policy and climate protection, the Israeli public is still not very aware of the relationship between these two areas. Among other factors, this is because Israel's greenhouse gas emissions make up less than one percent of emissions worldwide and thus play a relatively insignificant role on a global scale – even if the country does have a high per capita energy consumption. Any cuts in Israel's emissions would have only a negligible impact on global climate change.

Numerous government initiatives aim to reduce the country's energy dependency at the national and international levels, particularly when it comes to the use of crude oil.[3] These initiatives involve a variety of projects that also strive to cut its carbon footprint. Israel's highly innovative high-tech and clean-tech sectors play an important role in these endeavours. However, many environmental activists are critical of Israel because – although it ranks among the world leaders in these fields – it mainly exports its innovative solutions instead of putting them to good use in Israel itself.[4]

The main reason behind the drop in greenhouse gas emissions in Israel is its increasing reliance on natural gas to generate energy. In April 2013, the country started drilling for natural gas in the Tamar gas field off its coast. Israel's gradual transition to natural gas (away from coal, crude oil and diesel) for the production of energy is helping reduce the amount of greenhouse gas it emits. As a result, Israel has improved its carbon footprint since the middle of the last decade while also halting the rise of its greenhouse gas emissions.[5]

However, this ostensibly positive development may have a negative impact on the promotion of renewable energies and could also hinder the development of not only a sustainable energy policy, but also one that ensures independence in the long term. As 40 percent of offshore natural gas reserves are designated for export, Israel will be able to rely on its natural gas supplies for around the next 30 years, according to current calculations.[6] If it fails to find additional natural gas or oil reserves and does not develop new technologies to efficiently generate alternative energies within this period, Israel will once again become dependent on imports. The Israeli government is going to fall short of its interim goal of generating five percent of electricity from renewable energies by 2014. In fact, current figures show that the country will not even produce two percent of its power from renewables by the end of this year.[7]

While public debate on energy matters in Israel rarely addresses climate change, there is no doubt that Israelis associate the rise in extreme weather events such as periods of drought and severe storms with climate change. The severe snow storm in December 2013 and the devastating forest fire on Mount Carmel in December 2010, which spread across a wide area due to persistent drought, were clear signs of the need to take action to adapt to the consequences of climate change. A political process has been under way in this area for several years, which culminated in the Ministry for Environmental Protection developing

2 | Cf. OECD, *OECD Environmental Performance Reviews: Israel 2011. Highlights*, p. 1, http://www.oecd.org/env/country-reviews/48962516.pdf [28 July 2014].
3 | Cf. Sharon Udasin, "Prime Minister's 2nd annual contest for oil substitutes is underway", *The Jerusalem Post*, 1 April 2014, http://bit.ly/1nHFa5J [28 July 2014].
4 | Cf. Sharon Udasin, "Nitzan Horowitz to represent Israel at US Senate climate change summit", *The Jerusalem Post*, 26 February 2014, http://bit.ly/1k6WSzr [28 July 2014].
5 | Cf. n. 2, p. 6.
6 | Cf. Shmuel Even and Oded Eran, "The Natural Gas Revolution in Israel", Anat Kurz and Shlomo Brom (eds.), *Strategic Survey for Israel 2013–2014*, Institute for National Security Studies (INSS), Tel Aviv, 2013, pp. 189–203, here: p. 199, http://inss.org.il/index.aspx?id=4538&articleid=6479 [28 July 2014].
7 | Information from an employee of the Public Utility Authority (PUA) of 15 May 2014. The PUA is responsible for the implementation of government policy and the award of renewable energy licencing.

a national climate change adaptation programme. The Israeli government's inter-ministerial committee is set to submit its recommendations soon.[8]

ISRAEL AND MULTILATERAL CLIMATE POLICY

Israel is affected by climate change, yet can do little to mitigate its impact. As a result, its commitment to this issue on the global stage can be interpreted as a desire to be part of the OECD[9] and thus forge stronger ties with the Western world.[10] Furthermore, climate change-related measures taken to cut greenhouse gas emissions aim to boost the Israeli clean-tech market and reduce dependency on energy exporters – thus minimising the country's strategic risks.[11]

While local media covered the UN climate conferences, there has been little mention of topics such as Germany's energy transition or European climate and energy policy. It has mainly been European organisations and German foundations that have broached these issues.[12]

CONCLUSION

Motivated by geostrategic and economic concerns, Israel is striving to boost its energy independence by focusing on the exploration of new natural gas and crude oil reserves as well as by promoting the use of renewable energies and encouraging energy efficiency. The fact that progress on these latter areas of focus will bolster the Israeli clean-tech industry while also potentially cutting greenhouse gas emissions is viewed as a positive side effect.

A key motivation behind Israel's efforts in the area of sustainable energy policy is to improve its position in the international community and become a more integral part of the western world. It is therefore the job of the European Union and particularly the Federal Republic of Germany to remind Israel of its commitments and responsibility to international climate protection and to help the country reach its targets through bilateral and multilateral cooperation. The clean-tech industry offers particularly promising options for economic and scientific partnerships with Israel.

Modular and swivelling collectors generate both heat and electricity for homes.

8 | Cf. Israel Ministry of Environmental Protection, *Israel Environment Bulletin* 40, 03 / 2014, p. 19, http://sviva.gov.il/English/ResourcesandServices/Publications/Bulletin/Documents/Bulletin-Vol40-March2014.pdf [28 July 2014].

9 | Israel was accepted into the OECD in 2010.

10 | It is characteristic that the suspension of the National Greenhouse Gas Mitigation Plan was criticised in particular for its negative impact on the international standing of Israel.

11 | Cf. "Environmentalists decry Israeli treasury's plan to freeze greenhouse-gas mitigation plan", *Haaretz*, 8 May 2014.

12 | Cf. Konrad-Adenauer-Stiftung Israel publication, http://kas.de/israel/de/publications [28 July 2014] also on "Energy Security and Energy Strategies in Europe and Israel", 2012.

JORDAN

Otmar Oehring | Simone Hüser

CLIMATE CHANGE IN JORDAN

While climate change has attracted little – if any – attention from the public in Jordan, the political sphere has taken a growing interest in this issue over the last few years. In 2013, the Jordanian Ministry of Environment joined forces with the UNDP and the Global Environment Facility to publish its first comprehensive national climate change strategy for the 2013–20 period.[1] The document identifies water shortages, scarcity of arable land and energy supply difficulties as the main challenges created by a changing climate.

Jordan is one of the driest countries in the world. It is faced with major challenges caused by a decline in rainfall and the accompanying increased risk of drought.

Jordan is the fourth driest nation in the world. According to studies on how climate change will impact the country, rainfall is set to decrease by a further 15 to 60 percent by 2099, while the risk of torrents, flooding and drought will increase.[2] Climate research also predicts that the average temperature in Jordan will rise by 2 °C by 2050. Its agricultural sector will be one of the areas hardest hit by the consequences of climate change. Only five percent of Jordanian land can be used for agricultural purposes.[3] Water scarcity has long been a structural problem in the country and cannot be merely attributed to a lack of resources. The Yarmouk and Jordan Rivers meet less than half of its water needs. As a result, ground water sources provide a major portion of water requirements. According to estimates, however, half of this water is lost due to leaks or other unexplained circumstances, highlighting the inefficiency of the water network.[4]

Climate change is affecting Jordan's energy sector as well as its water industry. Jordan is only responsible for 0.01 percent of global greenhouse gases, 73 percent of which come from the energy sector.[5] As a result, it is not required by the Kyoto Protocol to set quantitative targets to reduce emissions.[6] The country imports 97 percent of its energy and depends heavily on non-renewable energy sources.[7] Jordan signed a gas supply contract with Egypt ten years ago. The imported gas is used to generate electricity and until now has met almost 90 percent of Jordan's energy needs – all in all, a long-term, reliable and cheap energy supply. However, Egyptian President Mubarak's fall from power was followed by numerous acute gas shortages, as attacks in the Sinai frequently damaged gas pipes.[8] Imports of crude oil and mineral oil products rose in 2011 and 2012 by a respective 61 and 21 percent. On top of this, the overall energy requirements of Jordanian households have risen since 2008 by an annual average of 10 percent and are expected to increase by another 50 percent in the next 50 years. The influx of at least 600,000 refugees from Syria to date is increasing the demand for energy and further exacerbating the problem.[9]

Energy consumption accounts for around 20 percent of Jordan's national GDP and cost the country approximately JOD 4 billion in 2012. Only three percent of energy used in Jordan came from local resources, such as natural gas and oil shale. Experts point out that having a diverse and effective range of energy

1 | Kingdom of Jordan, Ministry of Environment, *The National Climate Change Policy of the Hasemite Kingdom of Jordan 2013–2020*, 2013, http://www.jo.undp.org/content/dam/jordan/docs/Publications/Climate%20change%20policy_JO.pdf [28 July 2014].
2 | Ibid., p. 24.
3 | Ibid., p. 26.
4 | UN and Kingdom of Jordan, Ministry of Planning and International Cooperation, *Needs Assessment Review of the Impact of Syrian Refugees on Jordan*, 11/2013, p. 109 f., http://undp.org/content/dam/rbas/doc/SyriaResponse/Jordan%20Needs%20Assessment%20-%20November%202013.pdf [28 July 2014].
5 | Hana Namrouqa, "Energy sector blamed for 73 Procent of greenhouse gas emissions", *The Jordan Times*, 19 May 2014.
6 | N. 1, p. 16.
7 | N. 4.
8 | David Schenker and Simon Henderson, "Jordan's Energy Balancing Act", *Policywatch* 2222, The Washington Institute for Near East Policy, 12 March 2014, http://washingtoninstitute.org/policy-analysis/view/jordans-energy-balancing-act [28 July 2014].
9 | Ibid., p. 119 f.

resources is crucial to safeguarding Jordan's energy security. They place particular emphasis on the future use of renewable energy systems. In Jordan's southern regions, for instance, the sun shines at least 300 days a year. Hence, these areas have remarkably high levels of insolation, and it would be possible to generate around 20 gigawatts of energy using photovoltaic systems – corresponding to almost four times Jordan's annual energy needs. Jordan's deserts could also be used as power generation sites. Electricity could be produced here using a combination of wind turbines and photovoltaic and solar thermal power plants. Electricity generated in this way could meet two-thirds of the region's growing demand for energy and reduce dependency on fossil fuels. There is also great potential for using other renewable energies, including wind turbines and hydropower plants. Oil shale is another unused resource: foreign companies may have invested in research into this resource, but it has yet to be fully exploited. Jordan therefore has a range of different options that could help alleviate the country's energy dilemma. As critics point out, however, there is often a lack of political resolve to use new energy sources – particularly renewables.[10]

Nevertheless, there has been some recognition of problems linked to climate change in Jordan over the past few years. Jordan signed the UNFCCC on 12 June 1992 and ratified it in 1994. The Jordanian government also launched its Water for Life strategy in 2008, which aims to boost the efficiency of its water management systems. Yet this interest in climate and environment-related topics mainly comes from the royal court and the government and is barely reflected in the parliament and general population. Though a survey estimates that 52 percent of Jordan's residents view climate change as a serious problem, there is still little awareness of how individuals can help improve the situation.[11] In response to this, Jordan's climate strategy plans to raise public awareness and introduce climate mainstreaming to all affected policy areas, such as agriculture, energy, food, health and education.[12] Financing this programme, however, will be a major challenge for the country. According to initial estimates, the costs will total US$5 billion. To date, only 0.5 percent of public expenditure has been allocated to the environment; international donor countries and organisations have provided the majority of funding. Jordan's climate change strategy aims to supplement the international contributions with national co-financing strategies in order to cover future costs.[13]

10 | Arab Institute for Security Studies (ACSIS) and Konrad-Adenauer-Stiftung Jordan, "Energy Security in the Middle East. Geopolitics, Security Challenges and Sustainable Supplies", 3 September 2013, http://kas.de/jordanien/en/publications/37920 [28 July 2014].

11 | Hana Namrouqa, "Majority of Jordanians believes in climate threat", *The Jordan Times*, 20 February 2014.

12 | N. 1, pp. 27–29.

13 | N. 1, p. 34.

LEBANON

Ilona Stettner

While Lebanon may not rank among the world's largest greenhouse gas producers, it is located in a region that is severely affected by global warming. As a result, Lebanon has taken steps to combat global climate change. Lebanon ratified the UNFCCC in December 1994 and signed the Kyoto Protocol in November 2006.

According to its own account, Lebanon has since actively worked to protect the climate and launched measures that aim to achieve the following objectives: boost public awareness of climate change; cut greenhouse gas emissions; reduce the negative impact on ecological, economic and social systems; enhance institutional capacities; and integrate climate change into various policy areas.[1]

In the past, climate protection had mainly been a matter for NGOs and the private sector and had tended to involve small projects using funding from foreign donors. However, since the 2009 UN Climate Change Conference in Copenhagen and Lebanon's subsequently proposed nationally appropriate mitigation actions (NAMAs), climate protection has been integrated into government policy and is mainly pursued in large-scale projects – albeit still with the help of funding from industrial nations.

The three most important players in the Lebanese climate debate today are the Lebanese Center for Energy Conservation (LCEC), which is affiliated with the Ministry of Energy and Water; the Community Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon (CEDRO), a project implemented by the UNDP in cooperation with the Ministry of Energy and Water, the Ministry of Finance and the Council for Development and Reconstruction (CDR); and the Climate Change Coordination Unit (CCCU), set up by the Ministry of Environment. The Issam Fares Institute at the American University of Beirut is active in the field of climate research through its Climate Change and Environment in the Arab World programme, which releases publications both on topics that particularly affect Lebanon, such as the country's water and electricity supply, and on issues that are relevant to the whole region.

Although Lebanon is outwardly showing a relatively impressive level of commitment, some maintain that there is a lack of political resolve to take actual steps in the right direction. These critics claim that the climate debate is instead misused as an instrument to advance political interests and that the influence of external players on Lebanese politics, such as interest groups representing the real estate industry or oil exporters / importers, is too great and the economic benefits too negligible. At the same time, these critics detect very little interest and commitment within Lebanon. No funds from the state budget have been invested in adaptation and mitigation projects. Current laws with regard to areas such as energy production do not offer end users any incentives to switch to renewable energies. There is also a lack of citizens' initiatives and campaign groups at the civil society level to counteract the influence of political and economic interest groups. Even the Green Party leans towards the March 14 Alliance, which represents the interests of the oil and real estate sectors and stands in the way of any real steps towards a sustainable energy policy.

STATUS QUO AND FUTURE DEVELOPMENTS

There can be no doubt that Lebanon is part of one of the regions which has been – and will continue to be – hardest hit by climate change. Over the last 125 years, the temperature in Beirut has risen by approximately 2.9 °C; rainfall has decreased by 15 to 20 percent during the same period.[2]

If global warming increases by a further 2 °C, the total volume of Lebanon's water resources will decrease by 12 to 16 percent. At the same time, if global warming increases by 2 to 4 °C, we can expect a snow cover melt of between 40 to 70 percent and a resulting elevation of the snow line from 1,500 to 1,900 metres, which would have serious consequences for the ground water recharge and water supplies in the summer.[3] The direct impacts of water shortages are being felt primarily in the agriculture sector, where higher temperatures and lower rainfall and evapotranspiration will cause ground water content to decrease

1 | See Republic of Lebanon, Ministry of Environment, 2014, http://climatechange.moe.gov.lb [28 July 2014].

2 | Republic of Lebanon, Ministry of Environment and Issam Fares Institute for Public Policy and International Affairs, "Country Brief Lebanon. National Economic, Environment and Development Study (NEEDS) for Climate Change Project".

3 | See Republic of Lebanon, Ministry of Environment, 2014, http://climatechange.moe.gov.lb/water [28 July 2014].

and aridity to increase.[4] Climate change is also affecting Lebanon's famous cedar forests. They are now threatened by shorter winters and reduced snowfall, which in turn cause more frequent outbreaks of insect infestation.

WHAT IS BEING DONE AND WHY (NOT)

More than half (54 percent) of Lebanon's greenhouse gas emissions come from the energy sector. Lebanon's energy supply is heavily dependent on imported petroleum products, and it is mainly the power plants of the public electricity company Electricité du Liban that are responsible for the country's carbon emissions. The remaining emissions can be attributed to private energy producers and are caused by the consumption of kerosene, liquefied petroleum gas and diesel oil. The increased use of these products can in turn be explained by Electricité du Liban's failure to supply adequate power. Due to insufficient resources, the company disconnects the power at regular intervals.[5]

As a result of the particular consequences of climate change for Lebanon and its particular types of emissions, the Lebanese state has mainly focused its response on measures to mitigate and adapt to climate change, as well as strategies to reduce emissions. For example, the government has announced proposals to prevent the salinisation of ground water and cut water consumption in households, industry and agriculture in order to alleviate the consequences of climate change for Lebanon's water supply. It has also presented adaptation strategies to help the Lebanese agricultural sector deal with the reduction in water resources. These included introducing species that are resistant to dry and hot weather and changing planting dates and cropping patterns.

In addition, various players have submitted proposals on environmentally friendly ways to reform the Lebanese energy supply system, such as those presented in a joint study by the Ministry for the Environment and the Issam Fares Institute at the American University of Beirut.[6] The study suggested integrating renewable energies into oil-operated plants or even replacing these plants with combined-cycle gas turbines, hydropower plants, photovoltaic systems and wind power.

Lebanon is aware of climate change and its consequences for the country and the region and openly discusses and researches these issues. There is widespread public dissatisfaction with the energy and water supply and numerous proposals have been made to reform these sectors in Lebanon. However, as with so many public matters, Lebanese environmental policy loses its urgency against the backdrop of the Syrian civil war and the resulting refugee crisis, political instability and other security problems. Furthermore, politicians have a large stake in too many economic interests. The upshot of this all is that no actual measures have been taken to reform the energy sector.

4 | See Republic of Lebanon, Ministry of Environment, 2014, http://climatechange.moe.gov.lb/agriculture [28 July 2014].

5 | Alan Shihadeh et al., "Effect of distributed electric power generation on household exposure to airborne carcinogens in Beirut", Research Study Report, 01/2013, Issam Fares Institute for Public Policy and International Affairs.

6 | Republic of Lebanon, Ministry of Environment and Issam Fares Institute for Public Policy and International Affairs, "Final Report, National Economic, Environment and Development Study (NEEDS) for Climate Change Project", 01/2011.

MOROCCO

Helmut Reifeld | Aziz El Aidi

THE CONSEQUENCES OF CLIMATE CHANGE IN MOROCCO

The consequences of climate change in Morocco have already created long-term imbalances. Longer dry spells are causing water shortages across the country. It is becoming increasingly common for all of Morocco's annual rain to fall within a few weeks, inevitably resulting in flooding, while the rest of the year remains dry. This is having a severe impact on Moroccan agriculture, which is the most important economic sector in the country, generating 18 percent of its gross domestic product and accounting for some 43 percent of its total workforce.

The drop in rainfall is not only causing severe crop failures, but also impacting agricultural cereal production. In regions with relatively dry climates, overuse of resources is having dramatic consequences: vegetation is completely disappearing and drinking water is becoming scarce. Morocco is particularly in need of a differentiated environmental policy with a long-term perspective. Both the established political parties and the majority of the population often lack awareness of the problems. This is illustrated in particular by the way they dispose of waste and reuse recyclable materials.

The new constitution passed in July 2011 guaranteed the principle of sustainable development (développement durable), the protection of natural resources and the "right to a cleaner environment and access to (drinking) water" (Articles 31 and 35).

Although Morocco has made relatively significant efforts to integrate environmental and climate protection regulations into its constitution and government institutions, the impact of climate change and the loss of natural resources has directly and indirectly affected the Moroccan economy and political sphere. According to a study by GIZ, the consequences of climate change in Morocco are only set to worsen.[1] Over the next few years, the Moroccan government will face these challenges in particular:

In the Imlil Valley (Toubkal National Park) a mountain slope has been transformed into terraces to maximise the area's agricultural yield.

- Rising food prices
- The need to admit increasing numbers of (climate) refugees from Sub-Saharan countries
- The need to fight climate change and take action at international level
- The need to develop a national climate policy

Morocco's commitment at international level dates back as far as the 1990s when it signed the UNFCCC. In the years that followed, Morocco ratified numerous conventions[2] (such as the Kyoto Protocol) and played an active role in fighting climate change.

Morocco's new classification in the Climate Change Performance Index 2014 is worth noting.[3] The country ranked 15th just behind Belgium and moved up five places from its position in the previous index. Morocco is therefore leading the way in the Arab world and Africa as a whole, and is viewed by some countries as a model.

At the national level, the country has developed various programmes to tackle the serious consequences of climate change, some with the support of German institutions. The fight against climate change focuses on the following areas: combating desertification, developing forestry, protecting forests and

1 | Cf. GIZ, "Adaptation to climate change, and Biodiversity", http://giz.de/en/worldwide/20237.html [28 July 2014].

2 | Cf. Jerome Kuchejda, "Marokko", *Klimareport 2011. Politik und Wahrnehmung (Climate Report 2011. Politics and Perception)*, Konrad-Adenauer-Stiftung, Berlin, 2011. p. 89.

3 | Cf. Jan Burck, Franziska Marten and Christoph Bals, *The Climate Change Performance Index. Results 2014*, Germanwatch and Can Climate Action Network Europe, 12/2013, p. 8, http://germanwatch.org/en/download/8599.pdf [28 July 2014].

safeguarding biodiversity. Morocco has already been tackling desertification for many years by developing and recycling agricultural areas, providing and mobilising water reserves and preserving forests.[4]

In order to safeguard the ecosystem of its forests, Morocco's Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification introduced a sustainable forest management strategy many ago years aimed at preserving diversity and also launched a comprehensive reforestation programme. Between 1942 and 2006, Morocco created ten national parks and four UNESCO Biosphere Reserves to protect its biodiversity. It joined forces with GIZ to develop a handbook on environmental education, which aims to serve as a guide to the administrative bodies running the national parks.[5] Visitor numbers are continually rising, and school classes are one of the most important target groups.

ENERGY INDEPENDENCE AND THE SWITCH TO RENEWABLES: AN ENERGY TRANSITION IN MOROCCO?

The Moroccan economy is heavily dependent on energy. At present, 93 percent of energy consumed in Morocco is imported from abroad and energy demand is constantly on the rise due to industrialisation and urbanisation. The Moroccan government plans to make considerable investments in renewable energies. Morocco's conditions are ideal for these forms of energy: the country is located between the Atlantic Ocean and the Sahara and has great potential for generating wind power and solar energy.

In his speech at the 38th anniversary of the Marche Verte in 2013,[6] King Mohammed VI cited the switch to renewable energies as one of the country's top priorities, alongside key national issues such as combating poverty, unemployment and social injustice. Morocco is not only striving to be part of the global switch to renewables, but is also steadfast in its resolve to use renewable energies to make it less dependent on energy imports.

In urban areas, 1,215 photovoltaic plants were joined together to form grids.

The last few years have seen many developments in this area, including intense media interest in the energy transition, regular and nationwide conferences, and public events. The annual Dii Conference in Rabat is particularly worth a mention. It was attended by high-level international decision makers and a range of national institutions who gave their undivided attention to the topic of energy.[7] By contrast, the general population is still showing very little interest in climate change and energy dependency. Most observers attribute this to the large education and prosperity gaps in the country.[8]

GERMAN-MOROCCAN COOPERATION ON ENERGY AND OPPORTUNITIES FOR EXPORTING RENEWABLY GENERATED ELECTRICITY

Over the last few years, Germany and Morocco have intensified their cooperation on energy matters. In 2012, the then German Federal Minister of Economics and Technology, Philipp Rösler, joined forces with the then Moroccan Minister for Energy, Mining, Water and the Environment, Fouad Douiri, to sign a declaration of intent to form a bilateral energy partnership. This declaration particularly focused on promoting renewable energies in Morocco.[9] In October 2013 the Rabat Declaration was drawn up, providing a new foreign policy basis to promote energy-related cooperation. Points 9, 10, 10b and 11 affirm the willingness of both countries to make considerable investment in renewables.[10]

4 | Cf. Kingdom of Morocco, Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification, "Lutte Contre La Désertification", http://www.eauxetforets.gov.ma/fr/text.aspx?id=1020&uid=39 [28 July 2014].

5 | Cf. GIZ, "Naturschutz und Wüstenbekämpfung" (Protecting Nature and Combating Desertification), http://giz.de/de/weltweit/20177.html [28 July 2014].

6 | Cf. "SM le Roi adresse un discours à la nation à l'occasion du 38ème anniversaire de la Marche Verte (Texte intégral)", Maghreb Arabe Press, 6 November 2013, http://bit.ly/1rOUU9v [28 July 2014].

7 | Incl. ADEREE, AMISOLE, MASEN, IRESEN.

8 | Cf. Kuchejda, n. 2, p. 87 f.

9 | German Federal Ministry of Energy and Technology, "Rösler und Douiri begründen deutsch-marokkanische Energiepartnerschaft" (Rösler and Douiri establish German-Moroccan energy partnership), press release, 3 July 2012, http://bmwi.de/DE/Presse/pressemitteilungen,did=495234.html [28 July 2014].

10 | Cf. Federal Foreign Office, "Deutsch-Marokkanische Beziehungen – Inkrafttreten der 'Erklärung von Rabat'" (German-Moroccan Relations – Rabat Declaration enters into force), 12 September 2013, http://bit.ly/1o39c3m [28 July 2014].

A further target of cooperation is to export electricity from renewable sources from Morocco to Europe. Yet it remains to be seen whether this will be possible in the near future. By switching to renewable energies, Morocco aims primarily to achieve its major goal of energy independence. In addition, it is still unclear whether the energy generated in Morocco from renewables will be used to meet energy demand in the countries of the Middle East and north Africa or exported to Europe. The European Union has yet to reach an agreement governing the import of green energy from north Africa. All of this shows that despite both Morocco and Germany's interest in exporting and importing energy, there are still problems which need to be resolved.

KfW Development Bank and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) have invested billions of euros in Morocco's mega-projects, the solar power plant near Ourazazate and the wind farm near Tangier, which are the largest of their kind in the world. The German government has pledged further funds to help develop the solar plants and enlarge the wind farms in Morocco. German-Moroccan cooperation is headed in the right direction: both countries are committed to supporting the energy transition with all the means available to them.

PALESTINIAN TERRITORIES

Hans Maria Heÿn

WATER IS STILL THE BIGGEST PROBLEM

The West Bank and the Gaza Strip are arid areas, making water one of the key points of contention between the Palestinians and their neighbours. As a result, environmental and water problems are viewed by some as political issues at both the national and international levels. The task of sharing water – and other resources – between the conflicting parties has led to frequent disagreements in the past. In the Palestinian territories, climate change is thus seen as a risk multiplier, which could aggravate tensions in the region.

Temperatures in the region have been continually rising over the last two decades, leading to an increase in the rate of water evaporation. The drop in rainfall[1] over the same period has led to ever-increasing water shortages.[2] Both the West Bank and the Gaza Strip source their freshwater from ground water aquifers, which are replenished by rainfall in the winter. If there is drop in rainfall, aquifers cannot fully regenerate. In the Gaza Strip, this has resulted in sea water intrusion into the coastal aquifers, meaning that salt makes its way into the remaining drinking water.[3] Over 90 percent of the Gaza Strip's water resources are already undrinkable. Calculations by the United Nations show that this figure is projected to rise to 100 percent by 2016.[4] The likely growth in population combined with regional climate change have led scientists to predict that the Palestinian territories will face annual water shortages of around 271 million cubic metres by 2020.[5] In addition to the difficulties for agriculture caused by a drop in rainfall, the processes of desertification and urbanisation are also claiming more and more fertile land.

Despite all these factors, the Palestinian public and media do not devote a great deal of attention to climate change. Faced with the Israeli occupation, many Palestinians view the drop in rainfall and rise in temperatures as a minor concern. To date, there has been a muted response from Palestinian policy makers to the dangers of climate change. The Environmental Quality Authority (EQA) was set up in 1996 and the Palestinian Law for the Protection of the Environment was passed in 1999. However, there has been little

1 | Annual decrease between 10 and 30 percent up to 2005. Marwan Hassan, "Palestinian Water: Resources, Use, Conservation, Climate Change, and Land Use", *Digest of Middle East Studies*, Vol. 21, 2012, No. 2, pp. 313–326.

2 | UNDP, as of 11 May 2014.

3 | Nidal Kader-Bader, Ministers Advisor for Climate Change, interview with author, Ramallah, 8 April 2014.

4 | Eran Feitelson, Tamimi Abdelrahman and Gad Rosentahl, "Climate change and security in Israel-palestine context", in: *Journal of Peace Research*, Vol. 49 (1), pp. 241–257.

5 | Michael Mason, Mark Zeitoun and Ziad Mimi, "Compounding Vulnerability: Impacts of Climate Change on Palestinians in Gaza and the West Bank", *Journal of Palestine Studies*, Vol. 41, No. 3, pp. 38–53.

progress made in putting their goals (to protect the environment, biodiversity and endangered ecosystems) into practice. It was not until 2008 that the Palestinian territories joined forces with the UNDP to publish a Climate Change Strategy and Action Programme. In 2010 the government set up the National Committee for Climate Change,[6] which brings together government representatives, NGOs, private companies and international organisations. Yet in spite of these efforts to address climate change, there has been little headway in implementing the programmes. The EQA has taken on more of a mediator role and mainly focuses on generating international donations; its own budget accounts for less than one percent of the Palestinian National Authority's total budget.[7]

The situation is similar with renewable energies. In reality, the Palestinian National Authority barely has any powers of control over the energy sector. Israel Electric Cooperation (IEC) controls around 98 percent of the energy supply in the West Bank. The Palestinians' only power plant is in the Gaza Strip and is run on diesel donated by international sources. The last few years and months have seen frequent shortages and interruptions in supply, as the partial blockade of the Gaza Strip has made it impossible to guarantee the power plant's continuous operation.[8]

The energy independence of the Palestinian territories is thus an important political issue. As the exploitation of conventional energy sources is currently proving extremely difficult, the energy debate is focusing more and more on renewable energies. The Palestinian Energy Authority has set itself the goal of sourcing around ten percent of its local energy from renewables by 2020.[9] Around 70 percent of Palestinian households already use solar panels to heat their water. A large proportion of these technologically unsophisticated systems are already manufactured in the West Bank,[10] providing further incentives to invest more funds into renewables. The West Bank and the Gaza Strip receive around 3,000 hours of sunshine each year. Hence, there is great potential for developing solar energy in these areas. New calculations show that solar power alone could meet up to 13 percent of the energy requirements of the Palestinian territories.[11] The Palestinian National Authority has yet to fully exploit this potential. As the Palestinian territories are primarily agricultural areas, it also makes sense to invest in biomass energy and jefit, a by-product of olive pressing.

This type of energy is appealing to the government and the majority of the population, but not because it helps protect the climate. Instead, it is seen as a welcome attempt to become less energy dependent on Israel. Above all, Palestinians have their hopes pinned on the offshore gas field near the coast of Gaza and not on renewable energies.

The majority of projects that promote renewable energies and climate protection are coordinated and funded by foreign donors. The Palestinian National Authority implemented two projects[12] in the West Bank as part of the German environment ministry's IKI programme and is also involved in a project organised by the European Neighbourhood and Partnership Instrument (ENPI). As a result, the Palestinians have a very positive opinion of European climate and energy policy, as the territories are one of the main benefactors of European relief aid (see the MED-ENEC-[13] and EUROMED[14] programmes). However, Germany's energy transition barely features in the debate within the Palestinian territories. As the Palestinian National Authority is not yet a full member of the United Nations, it has yet to obtain membership in any international environmental institution. Nevertheless, as a result of current progress on becoming a member of international organisations and institutions, the EQA hopes to join the UNFCCC by the end of 2014.[15]

6 | N. 3.
7 | Ibid.
8 | Cecilia Ferrara and Assia Rabinowitz, "Gaza's gas: EU millions up in smoke", EUobserver, 24 April 2013, http://euobserver.com/investigations/119824 [28 July 2014].
9 | Riyad Hodali, Executive Director of the Palestinian Solar and Sustainable Energy Society, interview with author, Ramallah, 20 April 2014.
10 | The Palestinian Energy Authority, Renewable Energy Department, http://pea-pal.tripod.com/renewable_energy_department.htm [28 July 2014].
11 | Reegle, "Renewable energy" and "Energy efficiency", http://reegle.info/profiles/PS [28 July 2014].
12 | IKI (International Climate Initiative), "World map and project list", http://international-climate-initiative.com/de/projekte/weltkarte-und-projektliste [28 July 2014].
13 | Energy Efficiency in the Construction Sector in the Mediterranean (MED-ENEC), http://med-enec.com [28 July 2014].
14 | Euro-Mediterranean Partnership (EUROMED), http://eeas.europa.eu/euromed [28 July 2014].
15 | N. 3.

TUNISIA

Hardy Ostry | Marie-Christine Roux

On 26 January 2014, the Constituent Assembly of Tunisia adopted a new constitution. Article 45 of this constitution establishes the fundamental right of the Tunisian people to "a healthy and ecologically balanced environment as well as the right to contribute to protecting the environment". In another paragraph, the Tunisian state pledges to "provide the financial means necessary to eliminate environmental pollution".

This additional article received almost unanimous support (144 votes for, no votes against and four abstentions) and indicates that at least Tunisia's legislators have "an awareness of the need to work towards creating a healthy climate and undamaged environment that ensures the sustainability of our natural resources and the security of generations to come", as is stated in the preamble. For Tunisian legislator Hasna Marsit, who joined forces with others to present and defend this article before the assembly, the new constitution thus recognises that Tunisia is particularly at risk from the consequences of climate change. According to Marsit, the predicted spread of the Sahara over the course of the 21st century could threaten the livelihood of many Tunisians, who mostly live on the small fertile strips of land at the northern tip of the desert.[1] With its new constitution, Tunisia joins the very small group of countries (now three, including Tunisia)[2] that have addressed climate change in their supreme legal document – making it not only a pioneer in north Africa and the Middle East, but also an example to the 194 remaining states that have yet to take this step. This new stage in Tunisian history therefore offers a unique opportunity to create a broad understanding of the challenges and dangers that climate change poses to Tunisia. Despite the fact that climate change has been elevated to constitutional status, it is important to avoid overestimating the actual impact of the resulting measures.

As is often the case with these kinds of pioneering ventures, steps must be taken to breathe life into the constitutional text with a view to creating widespread public awareness and actual political decisions. Unlike topics such as security, unemployment, food prices, the process of transition to democracy and new elections, issues concerning environmental protection and climate change rarely feature in public debate. Since the revolution, the people – and hence also the decision makers and politicians – are far more preoccupied with tackling rising food prices and unemployment than global warming. The impact of climate change will have serious consequences for the Tunisian economy[3] Furthermore, some observers regard climate change as a trigger for the revolution and believe that a policy approach geared towards climate protection could in turn have a positive impact on stability. Nevertheless, the issue of climate change is far from a priority for most Tunisians. Apart from individual incidents or campaigns that have struck a chord with the public, such as the shifting sand dunes threatening the Star Wars sets in Ong Jmel, climate change is given little coverage in the media and rarely features in statements from decision makers. The situation regarding waste disposal, which has got considerably worse since the revolution, is also a good example of the general perception of environmental and climate issues in Tunisia. Aside from the aesthetically unappealing and unpleasant side to the mountains of rubbish, they are spread across the entire country and contain pollutants, making them a serious risk to people's health and the environment, in particular to water quality. Last March, three years after this crisis began, the government launched a national clean-up and awareness-raising campaign, presumably because the situation directly affects the Tunisian people. However, the focus of this campaign is more on cleanliness than climate and environmental protection.

In light of the IPCC's Fifth Assessment Report, the current Tunisian president, Moncef Marzouki, raised the alarm in a speech at the National Day of Agriculture festivities on 12 May 2014, highlighting the general indifference towards climate change: "People act as if it were a problem that only affects developed countries or future generations. This problem is, however, a matter of urgency." He also stressed the need for Tunisia to prepare itself "to avert the dangers that

1 | Climate Parliament, "Our MPs introduce climate clause to Tunisian constitution – 26 Jan, 2014. Proposal from Climate Parliament MPs gains near unanimous support", http://climateparl.net/cp/386&langs=en [28 July 2014].

2 | The two other countries are Ecuador (since 2008) and the Dominican Republic (since 2010).

3 | Agriculture and tourism, the two main sectors of the Tunisian economy, are the most endangered.

lie in wait for Tunisia." The current low level of interest in climate change in Tunisia is not a good sign – not least because the government of experts that has run the country since January 2014 absorbed the Ministry for the Environment into the Ministry for Agriculture, meaning it essentially no longer exists.

In spite of the lack of proper attention and the lack of awareness-raising efforts, there have been a number of encouraging measures and initiatives since the revolution. Some have picked up where Ben Ali left off with his green policies; others are new projects that have managed to capitalise on the opportunities presented by Tunisia's fresh start. At this point, it is important to mention the commitment of GIZ and its work in this field. For many years it has aided Tunisia in developing a national, anticipatory and preventative strategy to help the country tackle climate change and minimise its negative effects.

Although it has been hard to judge public perception of climate change in Tunisia over the past few months, there is a clear political resolve with regard to energy policy and energy security. The characteristics of Tunisia's energy sector and the widespread awareness that traditional resources will inevitably run out already prompted Ben Ali to implement measures promoting renewable energies and energy efficiency, including the introduction of a favourable institutional and legal framework.[4] It appears that politicians in Tunisia have, for several years now, recognised the fact that a targeted policy centred on energy efficiency is the way forward to securing Tunisia's energy supply and curbing climate change, and have thus geared their policy decisions in these areas accordingly.[5]

The partnership between Germany and Tunisia launched in 2012 to help Tunisia switch to renewables demonstrates this approach. Helped along by Germany's experience and inspired by the German energy transition, Tunisia aims to produce up to 30 percent of its energy from renewable sources and cut its greenhouse gas emissions by up to 40 percent by 2030. Tunisia is on course to developing a new energy policy that strives to follow in the footsteps of the German model. With this in mind, it initiated a nationwide debate on energy in November 2013 to put together a new and integrative strategy and educate the public on energy matters, with the goal of demonstrating the links between energy security, policy making and climate change. Tunisia naturally also views European climate and energy policy from an economic perspective. It is aware of its huge potential to produce solar power and aims to play a central role in supplying Europe with renewable energies. As a result, the country is active in numerous projects, including initiatives organised by the Union for the Mediterranean, which promote the development of renewable energies and aim to build future energy partnerships. In order to develop an environmentally friendly energy policy, support is needed from "developed countries"; this, at least, was Tunisia's position during the last UN Conference on Climate Change in November 2013. According to Mohamed Salmen, the former Minister for Infrastructure and the Environment, "it is essential that developed countries keep their promise" and help developing countries make the switch to renewables through subsidies and other measures. Salmen's relatively traditional stance is reminiscent of the decisions adopted in Durban: all nations have common but differentiated responsibilities and particular consideration must be given to the development of poorer countries. Salmen points out that Tunisia has always been willing to join international efforts to combat global warming, in spite of its political challenges and its limited financial means. He adds, however, that Tunisia's continued involvement must not hinder the country's economic development.

4 | A closer analysis reveals that despite the legal framework there is, among other things, a lack of global coherence to include other sectors such as water, infrastructure and urbanism, as noted in the country report Tunisia of the Bertelsmann Stiftung's Transformation Index BTI 2014.

5 | Tunisia was ranked 52th in the 2014 Environmental Performance Index. The Yale Center for Environmental Law & Policy and Center for International Earth Science Information Network, "2014 Environmental Performance Index. Country Profile Tunisia", Columbia University, http://epi.yale.edu/epi/country-profile/tunisia [28 July 2014].

TURKEY

Nihat Karagöz | Colin Dürkop

TURKEY: BALANCING ENERGY, CLIMATE AND GROWTH TARGETS

Energy policy and energy security

From a government perspective, the Turkish energy sector is based on three main pillars – natural gas, lignite and hydropower. In the future, it plans to source more energy from renewables and nuclear power. According to the Ministry for Energy and Natural Resources (ETKB), the aim is to use Turkey's own natural resources wherever possible to generate energy in order reduce Turkey's dependency on foreign energy imports. The ministry states that, as the leading regional power, it is Turkey's top priority to source its energy from its own natural resources. Turkey has a wealth of renewable resources and plans to push ahead with generating electricity from renewables. In order to make greater use of hydro, wind, solar and geothermal power, the government has created the necessary legal framework and removed bureaucratic obstacles. Hydropower and wind energy have experienced considerable growth over the last few decades. Turkey's energy policy aims to exploit the country's geostrategic location and transform it into a hub and corridor for energy resources.

The Turkish Ministry of Foreign Affair's Center for Strategic Research (SAM) views Turkey as a transit state for energy resources travelling from the Caucasus, the Middle East and central Asia towards Europe.[1] Its foreign policy strategy is to forge stronger mutual ties between states and thus create stability. Geographically, it views Turkey as the "safest route" for transporting energy resources from East to West and from North to South. This situation could help safeguard energy security and create peace and stability in countries that are rich in natural resources.

From a public perspective, the debate in Turkey on energy policy focuses on the country's "appetite for energy" caused by its economic expansion. The government's goal to foster economic growth and make the country less dependent on foreign energy sources has met with public approval. In 2002 some 69 percent of national energy requirements were met by foreign sources; in 2010 this figure was 73 percent. As this shows, the government has only partly managed to achieve its goal. But Turkey has experienced an economic upturn. It imports 98 percent of its natural gas and 92 percent of its crude oil. The government would like to make the country less dependent on natural gas by producing energy from lignite and nuclear power. Some are critical of nuclear power because of its potential to cause an environmental disaster. Necdet Pamir writes, for instance, that Turkey's energy policy needs a radical paradigm shift,[2] pointing out that the country has more than enough domestic energy sources, particularly from renewable energies. He views nuclear power as a risky option and hence not an environmentally friendly choice.

Public discourse in Turkey also highlights the country's key role in European energy security. The Ukrainian ambassador to Turkey, Sergiy Korsunsky, views Turkey and Ukraine as essential partners in the EU's energy policy.[3] Furthermore, both countries lie on the route of the Caspian natural gas pipeline running from Turkmenistan and Azerbaijan to the European Union. Korsunsky believes that the southern corridor via Turkey and the modernisation of the Ukrainian transit system will make a significant contribution to the future of the European project.

From a media perspective, the discourse on energy policy generally depends on the political leanings of the publication in question. The business newspaper *Dünya* regularly dedicates a page to energy issues. Pro-government media mostly focus on the targets, measures and successes of state energy policy. The newspaper *Sabah,* for instance, has reported on Turkey's progress in the energy sector.[4] claiming that Turkish energy policy has been a success at the national and international levels and that the country has blossomed into a key player in energy policy in the Middle East. Publications critical of the government like the *Cumhuriyet* newspaper, on the other hand, have covered events such as the Seventh Energy Symposium of the Union of Chambers of Turkish Engi-

1 | Cf. Murat Yesiltaş and Ali Balcı, "A Dictionary of Turkish Foreign Policy in the AK Party Era: A Conceptual Map", *SAM Papers*, 07 / 2013, Ankara.

2 | Cf. Necdet Pamir, "Turkey: Going Nuclear or What?", *Reflections Turkey*, 03 / 2012, Istanbul.

3 | Cf. Sergiy Korsunsky, "The European Project and Geopolitics of Energy", *Turkish Policy Quarterly*, 01 / 2012, Istanbul.

4 | Kerım Ülker, "Türkiye enerjinin yeni lideri", Sabah, 25 May 2014, http://sabah.com.tr/Ekonomi/2014/05/25/turkiye-enerjinin-yeni-lideri [28 July 2014].

neers and Architects (TMMOB), which highlighted the need for renewable energy resources and a people-oriented energy policy.[5] Some reports also address the topic of energy policy – and in particular energy security – against the backdrop of the current crises in the Middle East. The newspaper *Vatan,* for instance, has featured articles on the crisis in Iraq and its impact on crude oil imports.[6] According to the paper, Turkish Energy Minister Taner Yildiz says that the supply of crude oil from northern Iraq will continue uninterrupted despite current developments in the country.

Lake Van in eastern Turkey is the largest lake in the country. Its water level is regulated solely by water evaporation.

Climate change and climate protection

From a government perspective, climate change has had a significant impact on Turkey (e.g. water shortages and agricultural production). Turkey signed and ratified the Kyoto Protocol, a supplementary agreement to the UNFCCC. As a result of its special status, Turkey is still not subject to binding emissions reduction targets.[7] A number of bodies are involved in shaping Turkish environmental policy, such as the Ministry of Environment and Urbanisation and the Ministry of Environment and Forestry. With climate protection in mind, the government plans to promote and use natural resources to generate energy and thus minimise the negative impact on the environment. At the same time, it stresses the fact that Turkey's energy demand is rising. In order to meet these energy requirements while taking into account the environment, the government has set itself targets to coincide with the 100th anniversary of the Turkish Republic in 2023. It aims to fully exploit all of the country's natural resources, maximise the use of renewable resources, introduce nuclear power as an alternative form of energy by 2020 and, lastly, bring its power generation system up to EU standards. A German-Turkish environmental steering committee was set up in 2006 with sessions held alternately in Germany and Turkey. It has implemented numerous bilateral projects in cooperation with organisations such as GIZ and KfW in Germany and the DSI water authority and the Association of Cities and Towns in Turkey. As Turkey is set to assume presidency of the G20 and chair other "G" groups, it will be expected to provide impetus for further efforts to achieve cooperation on climate policy initiatives.

From a public perspective, a number of different research institutes are dedicated to examining climate change and climate protection in Turkey. According to the Institute of Strategic Thinking (SDE), Turkey has launched many different projects in the sectors of energy, waste, transport and forestry.[8] It notes that Turkey passed the Renewable Energies Act in 2005 and the Energy Efficiency Act in 2007, and that the transport sector has increasingly been using alternative and high-quality fuels as well as new vehicles fitted with modern technologies. Furthermore, it points out that major cities are using rail transport, such as metro systems. The Marmaray Project in Istanbul, for instance, is expected to cut greenhouse gas emissions by 130 tonnes. According to SDE, the waste sector has seen an increase in the number of waste treatment plants equipped with modern systems and, between 2008 and 2012, trees were planted on 2.3 million hectares of land as part of Turkey's afforestation programmes. By signing the Kyoto Protocol, Turkey essentially committed itself to cutting greenhouse gas emissions by 2020. However, it was granted a special status that exempts it from binding emissions reduction targets.

5 | "İnsan odaklı enerji politikaları hayata geçirilmeli", *Cumhuriyet*, 26 October 2010, http://cumhuriyet.com.tr/haber/diger/115050 [28 July 2014].

6 | "Kuzey Irak petrolünde kritik tarih!", *Vatan*, 16 June 2014, http://gazetevatan.com/kuzey-irak-petrolunde-kritik-tarih--649029-ekonomi [28 July 2014].

7 | Cf. T.C. Enerji ve Tabii Kaynaklar Bakanlığı, "Enerji-Çevre-İklim Değişikliği", 3 February 2014, http://bit.ly/1nTyZMX [28 July 2014].

8 | Cf. Turgay Kart, "Kyoto Protokolü ve Türkiye", Stratejik Düsünce Enstitüsü, Türkiye Ekonomisi, 30 April 2013, http://sde.org.tr/tr/newsdetail/kyoto-protokolu-ve-turkiye/3313 [28 July 2014].

From a media perspective, climate anomalies such as sinking water levels in dam reservoirs in large cities like Istanbul (due to a decline in rainfall) and the resulting water shortages have prompted increasing debate in the Turkish press about climate change and its consequences. The newspaper *Vatan,* for instance, cited climate change as the reason behind the current dry weather in Turkey. The media also report on the occasional protest by civil society groups, such as demonstrations against the construction of hydro-power plants and the resulting damage to the local environment. There appears to be a growing public awareness of climate change. The Turkish media are also showing an interest in international climate summits such as the UN Climate Change Conference in Warsaw. Their views on the Turkish government's progress in tackling climate change vary depending on their political leanings. Under the motto "Turkey, bottom of the climate class", the opposition paper *Cumhuriyet* criticised the fact that Turkey ranked only 54th out of 58 countries when it came to improving climate policy. The Gezi park protests have had an important impact on coverage of climate change and climate protection in Turkey. The media have since given wider coverage to stories about grassroots protests against government building programmes in natural areas. The liberal paper *Taraf,* for instance, has reported on local protests against the construction of a mine in the Tekirdag province. Ultimately, however, climate change and climate protection have yet to become major topics in the Turkish media.

SUB-SAHARAN AFRICA

NAMIBIA AND ANGOLA

Bernd Althusmann | Hans Siglbauer

THE SIGNIFICANCE OF CLIMATE CHANGE IN NAMIBIA AND ANGOLA – IT'S TIME FOR AN ENERGY TRANSITION IN SUB-SAHARAN AFRICA

The Capanda dam on the Kwanza River in the Malanje province has four turbines that generate an output of 520 megawatts. The plant covers more than half of Angola's energy needs.

For years, climate change and the consequences it has for Africa has been a subject of debate, one conducted with varying degrees of intensity and for different reasons and motivations. IPCC's 2007 report painted a clear picture of the consequences of climate change for southern Africa in general and for the driest country in southern Africa, Namibia, specifically. Among other findings, the report concluded that climate change presented a serious threat to livelihoods, particularly those of the poorest segments of the population, and that it would adversely affect agriculture in countries like Namibia due to decreased precipitation.[1] It named climate change as the cause of future developments in Sub-Saharan Africa such as declining grain harvests, changes in water run-off and its availability, growing tensions due to increased drought and flooding, and impacts on ecosystems and livelihoods due to higher temperatures and aridity.[2]

The third and latest instalment of IPCC's Fifth Assessment Report (AR5) says that global carbon emissions have risen by 2.2 percent each year during the last ten years. The report notes that the share of renewable energies needs to treble or quadruple in the next few years to reduce the increase in greenhouse gases and achieve the goal of reducing carbon emissions by 40 to 70 percent by 2050. It argues that this is the only way to mitigate dire consequences such as droughts or the level of precipitation in African countries falling even lower than it is today.[3] However, the actual relevance of these future scenarios has not yet manifested itself to the necessary extent in government policy in Namibia and Angola. The focus has tended to be on more basic problems such as unemployment, the weak education and healthcare systems, or the food and water scarcity that plague the people of these countries, most of whom live in rural areas.

Neither Namibia nor Angola has put climate change and its consequences at the top of the political agenda, although this is not to say that they have not recognised how important the topic is for their future. Namibia's National Development Plan (NDP4, Vision 2030) absolutely recognises the importance of sustainable development, and particularly the role of renewable energy. Yet a potential policy framework for implementation in the near term has yet to be put in motion beyond the most rudimentary level. To this day Namibia has tended to put issues related to climate change on the back burner. Industrialised nations in Europe, the Americas and Asia are seen as the biggest culprits of climate change, and opportunities for sweeping changes are generally met with scepticism. In Angola, too, people have shown a restrained attitude about the consequences of extreme water and air pollution brought on by the oil industry, particularly in the Cabinda region's river delta, because oil has helped the country's economy grow by leaps and bounds during the last ten years. Without the boom in oil production, the progress Angola has made would not have been possible. However, there are signs in both countries that their respective energy and natural resources policy might be overhauled in the medium to long term.

1 | Cf. Michel Boko et al., "Africa. Climate Change, 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change", M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds.), 04/2007, Cambridge University Press, Cambridge, pp. 433–467.

2 | Cf. ibid., p. 435 f.

3 | Cf. Christoph Seidler, "Neuer IPCC-Bericht: Klimaschutz-Experten setzen Europäer unter Druck" (Climate protection experts put pressure on Europeans), *Spiegel Online,* http://spiegel.de/wissenschaft/natur/ipcc-wg3-und-eu-klimabericht-heizt-streit-in-europa-an-a-964120.html [28 July 2014].

In 2012, the Konrad-Adenauer-Stiftung and Von-Oertzen-Consulting published a study on the importance of renewable energies in Namibia in the hope of raising awareness of the subject, particularly among policy makers. It was assumed that the topic would be met would interest because Namibia had experienced a long period of drought that had serious consequences for many farmers in rural parts of the country.

However, the official response was lukewarm. In early 2014, the Friedrich Ebert Foundation published a comprehensive study on the potential of renewable energies in Namibia that was primarily aimed at the country's young people.[4] In addition, President Pohamba officially announced to parliament this year that Namibia would have to leverage the benefits of renewables to meet the country's energy needs. Nampower, the state-owned utility company, only meets around 39 percent of demand. The rest of the country's electricity is imported from surrounding countries.

In April 2014, the Namibian parliament hosted a two-day energy conference – substantially supported by the Konrad-Adenauer-Stiftung – on the importance and foreseeable consequences of climate change for southern Africa as well as the opportunities offered by renewable energies. Namibian and international experts exchanged ideas on the topic and passed a joint declaration that will serve as a signal of what is possible in Namibia – and possibly beyond. The declaration calls on parliament and the government to show greater recognition of the consequences of climate change for the country and institute a legislative initiative for better use of renewable energies. In addition to a large number of specific implementation measures, such as the greater exploitation of solar energy (Namibia has the highest number of sunny days of any country in the world), grid expansion and tariff fees as intermediate steps on the path to an energy feed-in law, the declaration also aims to bring younger generations on board by making climate change and sustainable solutions for energy security a part of every subject in every school. Namibia has therefore taken its first step towards a slow but steady switch to renewables. Namibia's parliament will discuss how to continue with these plans in June 2014.

Even in Angola, it seems, the oil age will not last forever. There, too, people are calling for greater diversification in the economy to prepare for the post-oil boom era.[5]

CLIMATE FORECAST FOR NAMIBIA

Namibia is one of the driest countries in Sub-Saharan Africa. Its climate is shaped primary by the Benguela Current, which brings cold water up from the Antarctic to Namibia's Atlantic coast, and by the Intertropical Convergence Zone and the Mid-Latitude High Pressure Zone, which meet in the north of the country. The combination causes cold, dry air masses to move closer to the earth, which prevents almost all precipitation.[6]

The country is the wettest from October to April. The north gets some 700 millimetres of precipitation each year, but parts of the south and the west may get less than 25 millimetres. The coastal areas have relatively low temperatures (10 to 22 °C on average) while the interior of the country can see temperatures of up to 37 °C. In addition, the rate of evaporation is extremely high.[7] Current forecasts estimate climate change will raise average temperatures by 1 to 4 °C by 2065. The rainy season is expected to get shorter, which would extend the dry season and have a grave impact on the ecosystem and people's livelihoods.[8]

4 | Natalie Renkhoff (ed.), "2014: Powering Namibia into the Future. Towards Sustainable Energy Production", Friedrich Ebert Foundation; Margaret Angula, "Gender and Climate Change. Namibia Case Study", Heinrich Boell Foundation, 2010.
5 | Cf. "Still much too oily", *The Economist*, 10 April 2014, http://econ.st/1pqcwoP [28 July 2014].
6 | Republic of Namibia, Ministry of Environment and Tourism, "Namibia Second National Communication to the United Nations Framework Convention on Climate Change", 2011, p. 19 f.
7 | Ibid., p. 20 f.
8 | Ibid., p. 57 ff.

NAMIBIA'S NATIONAL CLIMATE AND RENEWABLE ENERGY POLICY

In the past, Namibia's energy supply has not played a major role in social and political debates. Fuel and most of the country's electricity is imported from its neighbours, especially South Africa. Over time, however, people changed the way they thought about the issue.

The country ratified the UNFCCC in 1995 and approved a white paper on energy policy in 1998.[9] There is also the Namibian Renewable Energy Programme and a Renewable Energy and Energy Efficiency Capacity Building Programme, although these have not yet led to the desired scope of expansion in production capacity. In 2010, Namibia passed a National Climate Change Policy (NCCP), which is intended to serve as a legal framework for adapting to climate change.[10]

BARRIERS TO EXPANDING RENEWABLE ENERGY POTENTIAL IN NAMIBIA

The white paper from 1998 points to Namibia's nearly inexhaustible but minimally exploited renewable resources: "In addition to hydropower potential…, solar radiation in Namibia is the highest measured so far in any country in the world (up to 3100 kWh / m^2 / year in certain areas) and excellent wind resources exist in coastal areas."[11] Important hurdles to developing these resources include high dependence on imports from neighbouring countries, inadequate or highly abstract legal frameworks for planning, a relatively old grid in need of expansion, very low electricity prices as well as a lack of funding and a low level of interest in investing in production facilities.[12]

There is enormous potential in expanding the exploitation of renewable energies in Namibia. According to the white paper, a variety of production technologies for solar, water, wind and biomass sources are already available today and could gradually lead to greater independence and self-reliance for Namibia.[13] In particular, small plants that require relatively low investment could contribute to the realisation of decentralised production and supply systems and compensate, at least in part, for insufficient grid expansion.

NAMIBIA'S COLLABORATION WITH THE EU AND INTERNATIONAL ORGANISATIONS

EU development cooperation[14] with Namibia has yet to put forth an approach for projects to fight climate change.[15] However, the first quarter of 2014 did see the EU begin to focus on this area, as it earmarked around €6.7 million from the Tenth European Development Fund for measures addressing climate change adaptation and mitigation.[16] A small number of such projects have already been rolled out. They include a project to support a hybrid mini-electricity grid for solar, photovoltaic and diesel feed-in, with a rated power of 202 kilowatts, in Tsumkwe[17] and the ECOFISH project, which brings together countries bordering the Benguela Current (Angola, Namibia, South Africa) and a number of international actors such as the EU, the FAO, the UNDP and various NGOs with the aim of improving cooperation to sustain the ecosystem on Africa's south Atlantic coast.[18] Various SADC documents and treaties on climate change as well as the AU's New Partnership For Africa's Development (NEPAD) programme are seen as integral parts of Namibia's climate policy.[19] According to the UNFCCC secretariat, desertification is the greatest risk facing Namibia as a result of climate change. Namibia is therefore highly engaged in multilateral forums in order to slow this phenomenon. The Namib Declaration was drafted during the UN Conference to Combat Desertification, which was held in Windhoek in September 2013.[20]

9 | Cf. ibid., pp. 18, 101.
10 | Cf. Republic of Namibia, Ministry of Environment and Tourism, "National Policy on Climate Change for Namibia", 2010; Republic of Namibia, Ministry of Environment, "Convention on Climat Change", 2011, p. 101.
11 | Republic of Namibia, Ministry of Mines and Energy, "White Paper on Energy Policy", 1998, p. 43.
12 | Cf. Detlef von Oertzen, "Namibia's Energy Future. A Case for Renewables", Konrad-Adenauer-Stiftung, 2012, pp. 15, 37 ff., 86.
13 | Ibid., p. 43 ff.
14 | Development cooperation with Namibia set at €123.5 million in the 10th European Development Fund (EDF).
15 | EU, EEAS, "Technical and financial co-operation", http://eeas.europa.eu/delegations/namibia/eu_namibia/tech_financial_cooperation/index_en.htm [28 July 2014].
16 | EU, EEAS, "Call for Proposals Climate Change Adaptation and Mitigation, Including Energy (27 March 2014)", http://eeas.europa.eu/delegations/namibia/grants_tenders/files/20140205_en.htm [28 July 2014].
17 | N. 15; Tsumkwe Energy, "Outcomes", 2012, http://tsumkwe.startaenweb.com/outcomes [28 July 2014]; European Commission, "Environment. Tsumkwe Energy in Namibia", 2014, http://ec.europa.eu/europeaid/documents/case-studies/namibia_environment_tsumkwe_en.pdf [28 July 2014].
18 | Benguela Current Commission, http://benguelacc.org [28 July 2014].
19 | N. 10, p. 32.
20 | Cf. Republic of Namibia, "Statement by H.ehifikepunye Pohamba", speech at the AU Summit, 30 January 2014, http://bit.ly/1kmro91 [28 July 2014]; n. 10, p. 32.

CLIMATE FORECAST FOR ANGOLA

Angola has a tropical climate with stable temperatures of 20 to 25 °C all year round. It receives the most rain from October to April (100 to 250 millimetres per month). The northeast is the wettest region, and precipitation rates decline towards the south and west. The country received an average of 2 millimetres less rain per decade from 1960 to 2006. The average annual temperature, meanwhile, has risen by 1.5 °C each year during the same period. It is expected to rise by 1.2 to 3.2 °C by 2060 and 1.7 to 5.1 °C by 2090. There are conflicting forecasts for precipitation rates (–27 percent to +20 percent in 2090).[21] The southern provinces of Cunene, Huila and Namibe have suffered from severe droughts in recent years.[22]

ANGOLA'S NATIONAL CLIMATE AND RENEWABLE ENERGY POLICY

Angola sees climate change and its consequences primarily as a threat to the country's economy and population. The topic is rarely addressed in public debates, but when it is, the focus is on its impact and ways of adapting to it, not on ways for combating its causes. In 2011, Angola adopted a national energy strategy that includes the following key points:[23]

- Main goal: a four-fold increase in energy production by 2025,
- Decentralised production in small power plants/generators, primarily using water, solar and wind power and local materials (household waste) when ecologically and economically feasible,
- Electrification of large sections of the country, especially rural areas (goal for 2025: provide electricity access to some 50 to 60 percent of the population; today around 40 percent of Angolans have electricity, mostly those in urban areas),
- Reducing the percentage of biomass in energy production from 64 (2009) to 35 percent (2025) to protect forests and savannahs as natural carbon sinks.

Further initiatives in Angola include the Centre for Tropical Ecology and Climate Change, founded in 2012, and the International Conference on Energy and Water, held for the first time in 2013.[24]

ANGOLA'S STANCE ON THE EU AND MULTILATERAL COOPERATION ON CLIMATE AND RENEWABLE ENERGY ISSUES

In 2012, Angola and the EU signed the EU-Angola Joint Way Forward (JWF), which forms the basis for future bilateral cooperation on a number of topics.[25] As part of the JWF, Angola and the EU seek to work together in areas such as:[26]

- Mitigating and reversing negative impacts of environmental pollution and climate change,
- Transferring knowledge and experience between scientific institutions,
- Exchanging information on energy policy, supply, security, diversification and efficiency as well as best practices,
- Pursuing joint projects to expand the (renewable) energy supply.

Angola is bound by the UNFCCC's global climate protection regime. The country regularly asks for technology transfer in multilateral forums as well as financial support from industrialised nations. At the same time, Angola has pointed out that climate initiatives must not be allowed to threaten its economic development.[27] The United Nations has planned environmental protection and climate change initiatives in its development programme for Angola.

21 | Cf. C. McSweeney, M. New and G. Lizcano, "UNDP Climate Change Country Profiles: Angola", 2010, http://bit.ly/1tsUKVS [28 July 2014].
22 | Cf. Joao Baptista Borges, speech at COP19 in Warsaw, 2013, http://unfccc.int/files/meetings/warsaw_nov_2013/statements/application/pdf/cop19_hls_angola.pdf [28 July 2014].
23 | Cf. Republic of Angola, Ministry of Energy and Water, "The National Energy Security Strategy and Policy; Pres. Decree No. 256/11", 2011.
24 | "Governo angolano inaugura Centro de Ecologia e Alterações Climáticas", Africa21Digital, 25 August 2012, http://africa21digital.com/conhecimento/ver/20028115 [28 July 2014]; Angola Conferencia sobre Energia e Aguas (ACEEW), 2013, http://aceew.org [28 July 2014].
25 | Author's note: Other important documents on multilateral cooperation include the Cononou Agreement and the Joint Africa-EU Strategy (JAES).
26 | Cf. ibid.
27 | As in: UN, "Small Island Countries Say Climate Change Already Threatens 'Very Existence', Urge Immediate Aid to Vulnerable States, in General Assembly Debate", press release, 12 February 2008, http://un.org/News/Press/docs/2008/ga10689.doc.htm [28 July 2014].

STATUS QUO FOR RENEWABLE ENERGY PRODUCTION AND UNDEVELOPED POTENTIAL IN ANGOLA

Renewable energies currently provide a portion of Angola's energy production as a result of the widespread use of biomass. There is significant potential for expanding wind energy in the Namibe province. Solar energy and photovoltaics are most feasible in the south, where solar radiation is the highest. Hydropower could be cost-effective along the long rivers and on the coast.[28] Fossil fuel resources, especially crude oil, have not been used for a great deal of energy production so far. However, they are set to climb to between 45 and 55 percent of Angola's energy mix (2009: 33 percent).[29] Proven natural gas reserves stand at 270 billion cubic metres and are estimated to total more than 1,200 billion cubic metres (as of 2009).[30] Such plans and motives stand in the way of expanding the use of renewable energies in Angola.

SUMMARY FOR NAMIBIA AND ANGOLA

It appears that climate change, its effects and potential steps for adapting to it and preventing it are slowly gaining more of a foothold among the Namibian people, in the media and especially among policy makers. However, limitations owing to high investment costs, low technical feasibility and a lack of strong interest among political actors have meant that relevant energy supply projects – whether for fossil or renewable energy sources – are not receiving the impetus they need. The water supply in particular, both for direct nourishment and as a production resource (for agriculture, cooling, etc.) is equally critical, and sometimes it is even more important in the eyes of the people.

The general public in Namibia therefore do not yet appear to be sufficiently aware of the issue of climate change. The recent discussion initiated by the Konrad-Adenauer-Stiftung in the Namibian parliament signalled the start of a long overdue and serious look at the opportunities of renewable energies and the consequences of global climate change. This conference, Namibia's first on energy issues, revealed that Namibia clearly has the desire to take on a new leading role in renewable energy issues in southern Africa, especially given that the country is ideally equipped in terms of natural resources to ramp up its use of renewables. If the country manages to quickly create a legal framework for feeding renewable energies into the public grid, it will have taken an important step towards protecting the climate and beginning a switch to renewables. This is also likely to lead to new sources of income for the country's drought-plagued farmers and new ways to work their land. The Konrad-Adenauer-Stiftung's latest proposal for a programme that would unite agriculture and energy production, drawing on lessons learned from the German experience, has strongly resonated with Namibia's farmers and several of its parliamentary representatives. The fact that Namibia hopes greater use of new forms of energy production will also close gaps in its energy supply, not to mention make it less dependent on imported electricity, provides additional momentum for the debate over the consequences of climate change and the opportunities offered by renewables in Namibia.

In Angola – unlike in Namibia – climate change and its consequences are almost a non-issue in society. The topic is rarely discussed in the media. Policy makers are focused on growing the economy primarily with the help of fossil resources and seeking multilateral support from industrialised countries. And yet there are also signs that this severely isolated market is slowly opening up for foreign investment, and that the country is slowly starting to change its thinking, particularly with regard to the significance of a nationwide electricity supply.

28 | Cf. n. 23, pp. 12, 14.
29 | Cf. ibid., p. 3. The production of fossil fuels accounted for approx. 60 percent of GDP in 2008 so economic considerations likely to play a role here.
30 | Ibid., p. 19.

KENYA

Iris Karanja

INTRODUCTION

"I am firmly convinced that we are up to the task. Climate change is at the top of the government's agenda."

Those are the words of Kenya's former prime minister, Raila Odinga, in his preface to the National Climate Change Action Plan (NCCAP)[1], which was published on 27 March 2013. A short time later, on 16 April 2013, the newly elected president, Uhuru Kenyatta, gave his inauguration speech[2] in Kenya's parliament, naming nine issues for his government to focus on. Environmental protection and climate change were not among them. But even Uhuru Kenyatta acknowledged that, "We are caretakers of our environment, which we must preserve for future generations of Kenyans. We have the sacred task of protecting it."[3]

CLIMATE CHANGE'S IMPACT IN KENYA

There is already reason to fear that rising average temperatures and unreliable precipitation could cause steppisation and thus a reduction in agricultural land. This would lead to food shortages in the long term. The La Niña drought of 2009 had devastating consequences. One-quarter of the population suffered from malnutrition. But droughts and water shortages will not be the only consequences; torrential rains will become more common and sea levels will rise. This will result in flooding, landslides and soil erosion. A UNICEF study on climate change in Kenya found that rising water temperatures in Lake Victoria not only impacted species diversity in the lake, which affected the livelihoods and incomes of people in the area, but also promoted the spread of malaria and cholera.

The impact of climate change on energy production – 70 percent of which comes from hydropower – as well as on agriculture, the food supply, plant and animal diversity, and tourism can no longer be denied.

KENYA'S RESPONSE TO CLIMATE CHANGE

Climate change and its consequences have been part of Kenya's public and political debate for a long time. Kenya ratified the UNFCCC in 1994 and the Kyoto Protocol in 1997. In June 2002 it responded to the ratification of the UNFCCC by publishing four key points as part of the Climate Change Enabling Activity. This shifted the focus to taking stock of greenhouse gas emissions, identifying necessary mechanisms for adapting to climate change and conducting relevant research and awareness campaigns.

The Environmental Management and Coordination Act entered into force in 1999. To this day it is the only law dedicated entirely to environmental protection, and the only one that governs institutional and statutory matters, among other things.

In 2010, the Kenyan government passed a National Climate Change Response Strategy (NCCRS). This document expressly emphasises the need to address climate change. The NCCRS focuses on reducing greenhouse gas emissions and adapting to new conditions. It also covers collaboration at the international level, the assessment of specific impacts, the analysis of possible ways of reducing emissions, recommendations for a legal framework, the involvement of acutely affected segments of the population and the creation of a concrete implementation plan.

The NCCAP was published on 7 March 2013 in response to the NCCRS. The Kenyan government worked with representatives of civil society, the private sector and various scientific experts to develop the NCCAP. International support for the NCCAP came from the UK, Denmark and Japan. The NCCAP is a comprehensive document that addresses not only the impacts of climate change and the necessary steps for adaptation and emissions reduction, but also legislative, financial and institutional aspects. However, its goals are both ambitious and expensive. The implementation costs alone total US$12.76 billion for the first five years.

1 | Republic of Kenya, "National Climate Change Action Plan 2013–2017", http://cdkn.org/wp-content/uploads/2013/03/Kenya-National-Climate-Change-Action-Plan.pdf [28 July 2014].
2 | "President Uhuru's speech during official opening of 11th Parliament", *Capital FM*, 16 April 2013, http://capitalfm.co.ke/eblog/2013/04/16/president-uhurus-speech-during-official-opening-of-11th-parliament [28 July 2014].
3 | Cf. ibid. Author's translation.

"Kenya is the only African country that is taking climate change seriously and discussing a law on climate change."[4] The law being referred to here is the Climate Change Bill, which was passed by parliament in 2012 but vetoed by the then president because civil society had not been adequately incorporated. The bill sets up a Climate Change Council (CCC) made up of representatives from government, the private sector and civil society. The council is the only body with the power to set guidelines relating to climate change, plus coordinates all government action in this area and advises the national government as well as county authorities. The bill also sets up a climate change fund. Parliament is now debating the bill again and is expected to pass it in the next few months.

A geothermal power plant in the Olkaria area. Kenya has three power plants of this kind, which together produce 200 megawatts. It is the first African country to harness geothermal energy for electricity production.

PUBLIC DEBATE ON CLIMATE CHANGE IN KENYA

Climate change itself is rarely debated in public, but many topics that are indirectly related to it do receive attention.

Rising energy prices, for instance, are a result of water shortages, as hydropower provides 70 percent of the country's energy. This impacts almost every area of life and the economy.

Calls for more precise weather forecasts have been getting louder in the hope of minimising the negative effects on agriculture. The media have also been saying the government is not being proactive enough. Strategies for assisting in the event of a drought are insufficient. Government measures have been criticised as inadequate, corrupt and unsustainable.

ENERGY POLICY

Kenya's energy policy focuses mainly on electricity production, yet most households depend coal and wood because a legal electrical connection is usually too expensive (around €350) and not even available in many parts of the country. KenGen is Kenya's largest electricity producer, providing 75 percent of the country's power needs. The state owns 70 percent of KenGen. Most electricity comes from hydropower; other sources include thermal and geothermal power plants, wind energy, solar energy and sugarcane biomass. Total available capacity stands at 1,515 megawatts. This is not enough to meet electricity demand in Kenya. In addition, the country has a fragile infrastructure, so power failures are common.

One plan to increase capacity during the next 20 years has 26 percent of the country's energy coming from geothermal, 19 percent from nuclear, 13 percent from coal, 9 percent from imports, 9 percent from wind, and 20 percent from gas and diesel. It does not mention solar.[5] On one hand, Kenya is promoting green energy, while on the other, it aims to build coal and nuclear power plants, which have no part in its current energy mix. Kenya already has a Nuclear Electricity Board (KNEB),[6] and its first nuclear power plant is slated to begin operation in 2022. KNEB's website claims that nuclear power is the best source of safe, clean, reliable electricity.[7] The German and international debate over nuclear energy seems to have been ignored.

4 | "Kenya is the only country in Africa that is spearheading issues of climate change by initiating this vital Climate Change Bill." Hon. Ottichilo, in: "Kenya Climate Change Bill proposes Establishment of a Council", Heinrich Boell Foundation, 11 April 2014, http://ke.boell.org/2014/03/11/kenya-climate-change-bill-proposes-establishment-council [28 July 2014].

5 | "Power generation in Kenya", Kenya Engineer, http://kenyaengineer.co.ke/index.php/columns/powertrains/1477 [28 July 2014].

6 | Kenya Nuclear Electricity Board (KNEB), http://nuclear.co.ke [28 July 2014].

7 | "Nuclear energy is the best way to produce safe, clean, reliable, base load (at a constant supply) electricity. Both nuclear and other renewable sources of energy, such as wind, solar and geothermal plants could play a major role, as the reduction of carbon emissions becomes a higher priority." Cf. KNEB, "Why Nuclear Electricity", http://nuclear.co.ke/index.php/public-information/why-nuclear-electricity [23 May 2014].

SUMMARY

Besides national climate policy, there are many instances of cooperation that directly support the Kenyan people on a small scale. For instance, GIZ has a project that promotes the use of more efficient wood furnaces for cooking and enables local production of this efficient technology. The German Investment and Development Corporation (DEG) and the KfW Development Bank work with private companies to expand the use of geothermal energy for electricity production. Other projects promote sustainable irrigation techniques for agriculture and teach people more effective growing techniques. There are also numerous reforestation initiatives, which aim to increase Kenya's wooded area from the current level of 5.9 percent to 10 percent.

Kenya is on the right path to soften the effects of climate change, but it is doubtful whether the government's ambitious goals can really be achieved in the planned time frame. As in many areas, there is a lack of coordination among the various regulations and laws, as well as across the various projects and initiatives. Furthermore, other policy topics often steal the spotlight in the political and public debate. There is a danger that national plans could be delayed through a lack of political will and financial resources. One can only hope that this does not happen, because, as the former state secretary for the environment, Ali Mohammed, once said, Kenya's "green growth is not just an idea, it is a strategy for survival".[8]

8 | Republic of Kenya, Ministry of Environment and Natural Resources, The Climate Change Secretariat, "Kenya Launches a National Climate Change Action Plan (NCCAP)", http://kccap.info [28 July 2014].

SENEGAL

Ute Gierczynski-Bocandé

Situated between the Atlantic Ocean, the Sahel and forested areas, Senegal is one of the 15 African countries most threatened by climate change. This issue is on the minds of policy makers, the public and the media, especially when problems caused by climate change have a direct impact on people's everyday lives. Coastal erosion and the destruction it causes to buildings, desertification and the resulting loss of grazing and agricultural land, and flooding during the rainy season regularly feature in media reports and political debates.

HOW IS CLIMATE CHANGE PERCEIVED BY SENEGAL'S CITIZENS, POLICY MAKERS AND MEDIA?

The Senegalese people are at least partly aware of environmental issues, but they rarely undertake initiatives to solve problems at the root. By contrast, there are numerous initiatives to address environmental problems at the academic level, in civil society and among NGOs. One specialist publication dedicated exclusively to presenting approaches for solving environmental problems and climate change is Vie (Life), edited by an environmental engineer from the University of Dakar.

Media coverage of environmental problems in Senegal has picked up in recent years. Various climate conferences and escalating ecological problems within the country have contributed to this trend. The public sees climate change as a result of the greenhouse gas effect, which can ultimately be traced back to industrialised nations. Yet they are also increasingly recognising and acknowledging that factors in Africa and Senegal are triggering and accelerating climate change.

Just a few years ago, the responsibility for climate change was given exclusively to industrialised nations, but now the Senegalese media are publishing more detailed, better researched articles on local causes of problems. Daily newspapers focus primarily on the acute problems. During the rainy season they regularly have headlines about flooding in the heavily populated wetland areas around Dakar and St. Louis. Financial speculators and mistakes by land surveyors have led to a situation where wetlands are being developed as residential areas instead of being protected.

The independent media emphasise the responsibility that the government and the authorities bear when it comes to the country's environmental problems. Daily newspapers like *SUD, Walf Fadjri* and *La Gazette* have reported that irresponsible behaviour on the part of government officials has made many cases of environmental destruction possible. Illegal clearing of entire forests, for instance, can only happen with silent consent from the authorities that oversee them.

The government's interference in laws governing the use of land has been equally as serious. The constitution says that farmable land and nature reserves belong to the government, and yet observers say large portions of this land have been given to individuals for their estates. For instance, the caliphs of the major brotherhoods in the Thies region received several thousand hectares of land in a nature reserve just after it lost its protected status.

Another problem in this area has intensified as a result of climate change: conflicts between farmers and nomads. Steppisation caused by deforestation in northern and central Senegal has led nomads there to take their herds of cattle further south, where conflicts soon arise with local farmers. The affected groups are well aware of this potential for conflict, but policy makers and the media have yet to give it much attention.

In the Kedougou region, large territories have been transferred to foreign investors such as gold companies. At the same time, huge swathes of land in the Kedougou region and along the Senegal River in the north of the country have been made available to agricultural companies to cultivate crops for biofuels. These moves have been criticised at the international level but the government hails them as flagship projects, and they are rarely denounced by the media or the people.

One subject that is drawing sharp criticism at the moment is the illegal development of coastal areas, especially in Dakar. During the past ten years, mostly private investors have violated environmental protection laws by developing large parts of the coast on the Dakar peninsula. This has minimised the public's access to the sea and created air circulation problems in Senegal's capital, which already has severe air pollution. Another consequence of this construction activity is massive coastal erosion, a problem that has been worsened by climate change and rising sea levels. In a recent incident, an undeveloped section of the Corniche (Dakar's coastal area) was sealed off with a wall. People from neighbouring areas organised several large protests, some of which ended in clashes with police. Although a construction permit had been issued for the Turkish Embassy that was to be built there, there was no legal basis for the permit. In spite of the clashes, the protests continued until the president himself intervened and asked the Turkish Embassy to stop construction. The embassy is now set to be built in a new location, and peace has been restored for the moment. In other parts of the country, civil society is not as active and people are not well-informed about environmental problems. Media coverage picks up most when dramatic events occur or in the run-up to elections.

Political parties create capital from climate change issues mainly before elections. While party agendas normally tend to neglect environmental matters and climate-related problems, they give them weight in the election context. During local elections in June 2014, candidates promised to solve numerous environmental problems, including those caused by climate change. Among the issues were renewable energies as an alternative to fossil fuels, tighter regulation of natural resource exploitation, sanctions for environmental destruction and better resource management particularly for water and land. The country has two green parties, which have provided mayors for the islands of Gorée and Ngor, which lie just off the coast of Dakar. However, no one has addressed the fundamental problems so far, at least not to the extent necessary.

Adding an environmental component to Senegal's economic and social council has done nothing to change this. On the contrary, its creation appears to be more of an alibi considering that the entire council, which is a type of second chamber of parliament with an advisory function and nominated members, is seen by the public as an unnecessary waste of funds.

Other agencies have been more aggressive and efficient at addressing climate change and proposing solutions to problems. Architects, for instance, have lobbied for climate-appropriate construction, criticising the fact that virtually all new official and non-government buildings in the nation's capital and regional capitals are being built with materials that are not adapted to the climate (glass, concrete, etc.) while also proposing sustainable alternatives. In addition, the Environment Institute at the University of Dakar is working to understand and limit the impacts of climate change. There is also a network of journalists that specialise in environmental issues, although it is not very well-known yet.

Everywhere in Senegal there are reminders that the government and the people need to change the way they think about environmental problems, but the

In southern Senegal, batteries and diesel generators were once the main source of energy. But a growing number of communities are now installing photovoltaic systems, which also provide power for health clinics.

responsibility is normally left up to political decision makers. But they are more interested in topics that win votes, like reducing food and rent prices and combating unemployment. Climate change plays a subordinate role in spite of the fact that the green economy could create a large number of jobs. Yet there is one bright spot worth mentioning in the otherwise poor track record of Senegal's political commitment to climate change. The initiative of former President Abdoulaye Wade (2000–2012) to build a "large green wall" – a forest belt stretching from Senegal's Atlantic coast all the way to the Nile – has already begun to be implemented in Senegal.

DISCUSSION OF CLIMATE CHANGE IN THE CONTEXT OF NATIONAL AND INTERNATIONAL ENERGY POLICY AND ENERGY SECURITY POLICY

Senegal cannot develop without an efficient economic sector, and businesses in particular need a guaranteed minimum energy supply, which does not exist in Senegal to the extent necessary. As a result, solving energy shortages is at the top of the agenda for the Senegalese media and government. The energy sector development plan for 2013–17, which President Macky Sall's government passed after he was elected in 2012, underscores the urgency of energy security in ensuring sustainable economic development.

The presence of donor organisations impacts the concept behind Senegal's environmental policy given the larger context of many European countries' hope to switch to renewables. The agenda set for the government by the coalition around President Sall and the government declaration of his prime minister in late 2013 both highlight environmental responsibility. Environmental legislation offers a legal foundation for sanctions in the event of environmental offenses, especially when they have an impact on climate change. Like the ratification of inter-African and international treaties on climate protection, these documents offer a foundation for action. The problem comes with implementing them.

Discussions of climate change in the context of national and international energy policy and energy security policy take place in small groups of experts, but it is rare for them to occur in the media and even rarer in the general public. The country's energy supply is often discussed in the press, especially in view of the huge power failures that occurred during the previous regime. They played a big part in the people's dissatisfaction with the Wade government and frequently led to violent protests. Not surprisingly, ironing out the kinks in the energy supply was at the top of the agenda of President Sall, who was elected in 2012. However, they are currently relying on rented generators to do the job, which is very expensive. They will not be able to continue this for long because the costs of renting the generators and importing fossil fuel (oil) for them have put extreme strain on the government budget. To provide quick relief, the government decided to accept South Korea's offer to build a coal-fired power plant near the coast. The opposition has called this project a gross violation of the climate protection treaties Senegal signed, but virtually no one in the public seems to be aware of it. Once it is built, the power plant will do more than increase Senegal's dependence on fossil fuel imports. The media have also drawn attention to the catastrophic effects it will have on the environment and the climate.

Senegal's energy security comes primarily at the expense of the environment. Although university professors and other experts demand research on and use of renewable energies, in the reality of day-to-day politics, energy security stands more for satisfying the needs of the country's people than for climate protection and sustainable resource management.

EUROPEAN CLIMATE AND ENERGY POLICY AND GERMANY'S ENERGY TRANSITION

The few experts and politicians who have looked at the issue have a positive view of the pioneering role that Germany and Europe have taken in international climate policy by deciding to institute an energy transition. Germany in particular is considered a country where environmental protection plays a central role. German projects for a sustainable energy supply, coastal conservation and forest conservation (through agencies such as GIZ) are perceived as sensible and efficient.

However, the Senegalese press only highlights Germany's political role in the international climate debate when special events occur, such as the signing of the new treaty between the governments of Germany and Senegal, in which Germany's development cooperation focuses on sustainable development through renewable energies.

SENEGAL'S POSITION IN MULTILATERAL CLIMATE POLICY AND THE UN'S ROLE IN THE CLIMATE DISCOURSE

Senegal has participated in a large number of international initiatives to protect the climate through multilateral climate policy. For instance, Senegalese governments have signed numerous conventions with this aim, from the Kyoto Protocol to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes. Senegal's media have at times provided extensive coverage of international and national climate conferences. The United Nations has been assigned a key role in the climate discourse; political decision makers in Senegal emphasise the importance of international organisations at the continental and global level in multilateral climate policy. Senegal's climate policy takes international conventions and treaties seriously, and Senegal theoretically belongs to the group of countries that provide targeted support for suitable measures for mitigating climate change or appropriately responding to it. Yet, in reality, these noble intentions often face practical political constraints that can slow or halt sustainable development. The example of the construction of the Turkish Embassy (which was ultimately prevented) is a good illustration of this fact.

TANZANIA

Kristina von Knobelsdorff | Stefan Reith

INTRODUCTION

Current climate reports always describe the possible scenarios forecast for Tanzania during the next few years in very dramatic terms. It is a country that is at extreme risk of both severe flooding and devastating droughts, one where people, land and water face the worst consequences of climate change. Rising sea levels threaten coastal areas, while unreliable and unpredictable rainfall leads to periodic energy shortages and severe damage to the country's poorly developed infrastructure, its water supply, its agriculture and indeed the entire ecosystem. Tourism, which is currently one of the fastest-growing sectors of the Tanzanian economy according to the country's national statistics bureau,[1] will be hurt as well. A decline in biodiversity and the melting glacier on Mount Kilimanjaro have a negative impact on the attractiveness of the country's most popular tourist attractions. Rising temperatures combined more rain increase the risk of diseases like malaria and cholera, but that is not all. According to the latest IPPC climate report[2] there is also a correlation between temperature increases and poor health, a loss of the ability to work and increased mortality.

1 | Cf. National Bureau of Statistics (NBS), "Tanzania Tourism Sector Survey. The 2010 International Visitor's Exit Survey Report", http://nbs.go.tz/nbs/takwimu/trade/Tourism_Sector_Survey_Report_2010.pdf [28 July 2014].

2 | Cf. IPCC, "Chapter 22. Africa", Final Draft, IPCC WGII AR5 Chapter 22, 31 March 2014, http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap22_FGDall.pdf [28 July 2014].

The socio-economic consequences are serious, which is not surprising considering Tanzania's economy depends heavily on climatic conditions. Particularly climate-dependent sectors, such as agriculture, generate nearly half of GDP. Around 80 percent of the population works in agriculture and is thus directly affected by the effects of climate change. A study by the UK's Department for International Development (DFID)[3] predicts the effects of climate change will cause Tanzania to lose 1.5 to 2 percent of its GDP each year through 2030. The study says that the impacts of a changing climate are big enough to seriously endanger the achievement of development goals in Tanzania such as economic growth and poverty reduction.

THE PERCEPTION OF CLIMATE CHANGE IN TANZANIA

Events such as Tanzania's severe drought of 2005–06, under which millions of people suffered, have made people keenly aware of the havoc that climate change can cause. Almost every day, local media in various parts of the country feature reports of torrential rains or rain scarcity, bridges being washed away, bad harvests and plant disease, food shortages and rising food prices. Events held by local NGOs and donor-organised international conferences and workshops receive a great deal of media attention. Yet the same phenomenon can be observed as with many other current issues: average citizens are interested, they inform themselves and they discuss the problems in detail. But they rarely change their behaviour as a result. They ignore the rubbish being burnt all around them and throw their plastic bottles by the side of the road on the way home. By dinner, which most households in Dar es Salaam prepare over a charcoal stove[4] the subject of climate change is long forgotten. They usually have more pressing problems.

One finds a similar pattern of behaviour among policy makers. They responded relatively late to the challenge of climate change, but at least they have several strategies in place now. These include the National Adaptation Program of Action (NAPA), developed in 2007; a national climate strategy[5] passed in 2012; and a national REDD+ strategy and action plan, drafted in 2013. Yet every single one of these plans only came into being with support and pressure from international donors. Good things can be said about the creation of a national meteorological agency, which provides an open source of daily information about the weather and the climate for anyone with Internet access, thus contributing to better assessments of climate change and climate risks, according to the UNDP.[6]

However, actual real-world implementation of these paper strategies has yet to occur. Officials say the government lacks the necessary funds. But what it lacks more is political will. The responsible ministries are understaffed in spite of the need to develop an effective climate strategy. And yet the South-South Knowledge Exchange project expressly requires them to work with other developing countries to this end. In their strategy, they were to define institutional duties and tasks with experts from Mexico, South Africa, Namibia and Zambia, plus identify adaptation techniques and steps to mitigate climate change. This exchange of knowledge, for which 30 Tanzanians travelled to Namibia for one week, resulted in a national climate strategy paper in late 2012.

The government has other priorities. An analysis[7] of the 2012 climate strategy and its implementation so far reveals that it has neither developed priorities nor sufficiently identified the budget necessary

3 | Cf. Republic of Tanzania and UKaid, "The Economics of Climate Change in the United Republic of Tanzania. A Study by the Global Climate Adaptation Partnership and Partners", 01/2011.

4 | 2,650 tonnes of charcoal are used every day in Tanzania, of which 1.5 tonnes in Dar es Salaam alone. This corresponds to a loss of 125,000 hectares of forest across Tanzania every year (total forest area of around 33 million hectares). Cf. Neema Msuya, Enock Masanja and Abrahamu Kimangano Temu, "Environmental Burden of Charcoal Production and Use in Dar es Salaam, Tanzania", *Journal of Environmental Protection*, 2011, p. 2.

5 | In 2011, the Tanzanian Ministry of Environment sent a letter to the World Bank requesting its support in drawing up an effective climate strategy. In its letter, it requested explicitly that this take place as part of the South-South project in cooperation with other developing countries. The strategy was to be drawn up in cooperation with experts from Mexico, South Africa, Namibia and Zambia to both define institutional obligations and responsibilities and identify adaptation techniques and measures to mitigate climate change. On the basis of this exchange, 30 Tanzanians travelled to Namibia for one week producing the National Climate Strategy Paper in late 2012.

6 | Cf. Marco Corsi, Simon Hagemann and Cândida Salgado Silva, "Annual Report 2011", UNDP, Africa Adaption Programme (AAP), 02/2012, http://undp-aap.org/sites/undp-aap.org/files/AAP%20Annual%20Report%202011.pdf [28 July 2014].

7 | Cf. Pius Yanda, Deograsias Mushi, et al., "Tanzania National Climate Change Finance Analysis", 2013.

to implement it, or possible sources of funding. The analysis also criticises the government for not having given the planning committee a place in the climate strategy, although the committee is said to be part of the national planning authority and is entrusted with monitoring, analysing and advising on long-term sector policy as well as socio-economic development matters. Another problem hindering the effective implementation of climate policy in Tanzania is that the climate is not yet perceived as a cross-cutting issue, so the responsibilities of different ministries have not been aligned with one another. For instance, the topic of climate change does not come up in regulations on water supply and wastewater disposal. The environment ministry has no influence on water policy or agricultural policy. Yet there is a long list of other factors that play a major role in fighting climate change and adapting to its effects, such as agriculture, forestry, food security and energy supply, tourism, industry and infrastructure, healthcare, residential development and land use.[8] Coordinating cross-sector projects to fight climate change remains a major challenge. The draft of the new constitution of the United Republic of Tanzania mentions the subjects of land, water and environment with reference to the constitution of Zanzibar, which is in need of revision, and the new constitution of Tanganyika, which still needs to be drafted, and so it does not provide any guidance either.

The UNDP's annual report on the Africa Adaptation Program (AAP)[9] identifies the following challenges that Tanzania faces in implementing the programme:

1. Lack of a shared sense of responsibility (ownership), due in part to the donors themselves
2. Lack of management skills and capacities at the government level, exacerbated by late awareness of the problem and resulting delays in taking action
3. Emphasising other priorities
4. Lack of strategies for monitoring and evaluation (M&E) and risk management (Terms of Reference)
5. Slow development of the terms of reference
6. Lack of knowledge of methodology
7. Lack of meaningful, coherent working plans
8. Lack of necessary communication with donors about consulting needs
9. Budget plans are often unrealistic, which hinders programme implementation
10. Corruption and lack of standardised financial reporting pose major challenges

ENERGY SOURCES AND ENERGY SECURITY IN TANZANIA – FROM CHARCOAL TO NATURAL GAS

About 88 percent of Tanzania's energy needs are covered by biomass, most of which are wood fuels. About 10 percent is met by petroleum, while only about 2 percent comes from hydropower or thermoelectric sources. It is therefore impossible to overlook the interplay between climate change and energy security in Tanzania. On one hand, there is enormous dependence on wood fuels, which will not necessarily continue to be available in the future. This is already having an impact on the everyday life of Tanzania's rural inhabitants, who are having to walk further and further to find wood. On the other hand, this rather unsustainable use of wood as an energy source and the resulting progressive deforestation are destabilising Tanzania's comparatively stable wooded areas and making them more susceptible to damage caused by climate change. Sooner or later, this interaction will cause serious problems for Tanzania's energy security. And yet the country has nearly inexhaustible renewable energy resources.

In 2013, the World Bank[10] approved a grant of US$50 million for Tanzania to promote renewable energies, especially to bring electricity[11] to rural areas. The proposed programme includes investment in technology, capacity building, funding for public-private partnerships, plus consulting and technical support. It remains to be seen what results will be achieved. Bioenergy is also getting a lot of attention, although regrettably almost always through external actors.

8 | Cf. Presentation by Geoffrey Bakanga, Senior Officer for Climate Change and Environment in the Vice President's Office: "Klimawandel und erneuerbare Energien in der Ostafrikanischen Gemeinschaft" (Climate Change and Renewable Energy in the East African Community), Konrad-Adenauer-Stiftung Tanzania, event publication, 12 December 2013, http://kas.de/tansania/de/publications/36365 [28 July 2014].

9 | Cf. Corsi, Hagemann and Salgado Silva, n. 6.

10 | Cf. Leandi Kolver, "$50m funding for Tanzania renewable-energy project secured", *Engineering News*, 13 September 2013, http://www.engineeringnews.co.zaarticle/50m-funding-for-tanzania-renewable-energy-project-secured-2013-09-13 [28 July 2014].

11 | Only about 14 percent of households in Tanzania have electricity, of which 12 percent in urban regions and 2 percent in rural regions.

According to an analysis[12] by the Food and Agriculture Organization of the United Nations, Tanzania is in a very early stage of bioenergy research and lacks information and clear rules and guidelines at almost all levels. Renewable energy continues to play a subordinate role in Tanzania's energy policy[13] Current government efforts are aimed primarily at meeting growing energy needs through the use of natural gas. According to the strategy paper on Tanzania's natural gas policy, roughly 42 billion cubic metres of natural gas have been found in Tanzania so far – both on and offshore. The government faces many challenges in terms of using this gas in a way that benefits all Tanzanians. It still lacks an efficient institutional and legal framework as well as the necessary infrastructure and sufficiently qualified human resources. However, the plan is still going ahead with the help of international investors, and a pipeline and gas-fired power plants are currently under construction.

The connection between climate change and energy security issues is rarely discussed in the Tanzanian public. The country's regular power failures are seen as a result of low water levels in reservoirs and resulting production outages in hydropower plants. We are not likely to see a broad debate on the need for climate-friendly energy before Tanzania manages to provide basic security for its general energy supply. Hence, it is hardly a surprise that government efforts are focused primarily on developing the country's huge natural gas resources and renewable energies are playing a subordinate role in the national conversation.

GERMANY'S ENERGY TRANSITION AND EUROPEAN CLIMATE POLICY FROM THE TANZANIAN PERSPECTIVE

People in Tanzania are keenly aware that western countries like Germany and other EU member states translate political strategies into concrete political action faster and more efficiently. They recognise this but are quick to point to the special challenges on the African continent. Corruption, extreme weather, poor education and a lack of technical expertise and funds are often cited to explain their own shortcomings in terms of implementation. They still generally view the industrialised countries as being primarily responsible for climate change. As a result, like most African policy makers, Tanzanian politicians believe that industrialised countries should first compensate the hardest hit countries and then, second, give them greater support to combat the effects. The climate debate also reveals anti-colonial sentiments in many cases. The feeling is that the West bears the responsibility for climate change and that developing countries are suffering the brunt of its consequences. They argue that industrialised countries should therefore redress the situation and stop acting like they have the right to dictate how developing countries in Africa should frame their environmental, climate and energy policy. Africa's decision makers frequently use this aspect of the climate debate to put pressure on international donor countries and draw financial support. The speech on climate change given during the 2013 UN Climate Change Conference in Warsaw (COP19) by Tanzania's president, Jakaya Kikwete, in his role as coordinator of the committee of African heads of state in the African Union, followed this line of argument and is highly representative of the views of other African leaders.[14]

Experts in Tanzania follow and discuss the advances and innovations being made in renewable energies in Germany in Europe. International teams of experts advise public and private actors in Tanzania on matters such as the potential of wind power and solar energy. Tanzanian political decision makers and experts from the academic world and civil society regularly participate in informational visits and study trips to Europe. This exchange, however, has yet to reach beyond the expert level. As a result, average citizens are mostly unaware of these sorts of developments in Germany and Europe. The issue still receives little attention from the political class as well, even though it offers major development potential for Tanzania.

12 | Cf. Irini Maltsoglou and Yasmeen Khwaja, "Bioenergy and Food Security – The BEFS Analysis for Tanzania", 2010.

13 | Republic of Tanzania, "The National Natural Gas Policy of Tanzania – 2013", 10/2013, http://www.tanzania.go.tz/egov_uploads/documents/Natural_Gas_Policy_-_Approved_sw.pdf [28 July 2014].

14 | Cf. "President Kikwete's Statement and Photos at the UN Conference on Climate Change in Warsaw, Poland", Kurugenzi ya Mawasiliano ya Rais, Ikulu ya Tanzania, 20 November 2013, http://ikulublog.com/2013/11/president-kikwetes-statement-and-photos-at-the-un-conference-on-climate-change-in-warsaw-poland [28 July 2014].

TANZANIA'S POSITION IN INTERNATIONAL CLIMATE POLICY

Before, during and after the United Nations global climate summits, there is a flurry of reports in the country about the summits as well as the many preparatory meetings. This was amplified prior to last year's COP19 summit in Warsaw by the fact that Tanzania's president, Jakaya Kikwete, headed the African delegation and was the African Union's official speaker on climate change. President Kikwete, whom well-informed observers say was deliberately working on his international profile as he neared the end of his presidency, discovered the topic of climate change and realised it could win him points on the international stage. This is sure to help him with his ambition of being appointed to an international office. During his speech in Warsaw, he repeatedly emphasised the fact that Africa is struggling with the worst effects of climate change although it has the smallest carbon footprint. He said that African states were doing everything in their power to effectively adapt to and mitigate the problem but were still in great need of financial aid and support. Kikwete therefore urged industrialised countries first and foremost to make specific pledges of financial assistance. His direct appeal represented the general intent of African states.[15] As suggested earlier, this was primarily to acquire additional donor funding. There has only been vague information so far about how African states would actually use the money in the Green Climate Fund, which projects and initiatives they would roll out and how sustainable these would be.

Tanzania can be seen as a typical representative of Africa's developing countries, which are directly confronted with the effects of climate change and see this as justification for urging industrialised countries in the West, which they view as the cause of climate change, to take greater responsibility for this wrong and in doing so also assume more financial responsibility. The appeals they articulate on the international stage contrast with national policies that include a series of instruments and strategies for adapting to and preventing climate change on paper, but which fail to sufficiently translate into concrete political action. Tanzania will have to show that the international funding it has appealed for so loudly has in fact been used in a targeted, sustainable way to advance projects aimed at halting climate change and adapting to its effects. In light of the present sluggish implementation of relevant strategies, the lack of cross-sector coordination and management skills in the responsible ministries, and the weak influence that the climate debate is having on energy policy, Tanzania is still a long way from playing the pioneering role that the country's president likes to claim for it.

15 | At a meeting of the African environment ministers held in the run-up to the COPs each year, representatives of African countries agree on a common African position on the issues of adaptation, agriculture, climate debt, climate equity, finances, global targets, the Kyoto Protocol, markets, mitigation and solutions as a basis for the negotiations. In 2012, the meeting took place in Arusha, Tanzania, and in 2013 in Gaborone, Botswana.

ZIMBABWE

Jürgen Langen

Many parts of the region now receive less rain than in the past, and the soil is sandy and low in nutrients. As the climate gets drier and drier, plants must adapt to low-moisture conditions. Livestock farming is widely practised.

In the past, small-scale farmers had virtually no problem with letting fields lie fallow, but today, with long periods of dry weather, poor irrigation systems, erosion and overused soil, this is rarely possible. Poor-quality seeds and deforestation are now making the situation worse. Crop yields have declined dramatically in recent years as a result. Many Zimbabweans are now undernourished. Climate change may make entire sections of the country infertile in the future and could cut crop yields in half by 2020. But Zimbabwe has been threatened by increasing poverty and hunger for many years now, and it will probably be

continuously dependent on international food aid in the future. President Robert Mugabe's so-called land reform has exacerbated the problem.

Scientists see worsening agricultural conditions and declining crop yields as the first unmistakable signs that climate change is already in progress.

Farmers are desperately trying to cultivate more land with corn, tobacco and seed-bearing plants. Some 400,000 hectares have already been converted to farming. But they had to burn down forests to get it, and this has exacerbated soil erosion. A number of farmers turned to livestock breeding for a while, but the quality of the meat plummeted because it became harder to find animal feed. That makes this another sector feeling the impact of climate change and its negative impact on agriculture.

The situation has brought about an increase in monoculture-dominated agriculture, a disastrous trend with a long history in Zimbabwe. Instead of looking for alternatives, farmers plant more of the most popular crops (maize) to increase their overall yield and ensure the survival of their families. Maize is fast becoming the central ingredient in the local diet, and this is leading to health problems.

There is an urgent need for greater cultivation of other staples. It is necessary to plant vegetable gardens that include indigenous varieties with high vitamin and mineral content, such as moringa, muriwo, okra, aloe vera and sage.

However, rural populations are currently faced with a more pressing problem, as recent years have seen a shift in the start of the rainy season:

- June: *madzura chando* (winter precipitation)
- August: *gukurahundi* (first rain/early rain)
- September: *bumharutsva* (second rain)
- November: *kutemera gwati* (true rainy season)

Average annual rainfall is 1,000 millimetres. The lowlands receive less than 400 millimetres, while the highlands record more than 600 millimetres and mountainous areas more than 2,000 millimetres. The sequence of precipitation times signalled the start of the true rainy season, which was the time to sow, but now farmers are plagued by uncertainty.

The Institute of Environmental Studies at the University of Zimbabwe looked at climate data for Zimbabwe between 1901 and 2005. Their findings show that the rainy season is now starting earlier, and it often begins with heavy downpours and tropical cyclones. Dry periods recur with greater frequency and greater intensity than in the past. Data from Zimbabwe's agricultural ministry confirm that the rainy season is now beginning in late October, whereas historically it did not start until mid-November. Meteorological studies show that precipitation in Zimbabwe has declined by five percent in recent years and the seasonal dry period has become longer.

Zimbabwe has a temperate climate. The highlands are subtropical while the northern and southern lowlands have tropical temperatures. In the highlands, temperatures can reach 30 °C in the summer and winter nights can have frost. The average temperature in the capital Harare is 20 °C. Climate forecasts expect temperatures to rise by 0.11 °C to 0.55 °C every 10 years. Temperatures in Zimbabwe increased by 0.4 °C during the last century, which is only a modest rise compared to the rest of the world. Yet this increase has already had disastrous consequences for agriculture. Yields for almost all cultivated plants have been steadily declining every year since 1990. Maize has experienced particularly significant declines. In places with low precipitation, harvests have been poorer than in previous years, such as at the end of the 2009–10 growing season when yields declined by 60 percent over the previous year. Harvests of tobacco, cotton, sugar peas, sorghum, millet and peanuts have been falling steadily as well.

GEOGRAPHY

Most of Zimbabwe is elevated in a central plateau called the high veld. The plateau begins in the southwest and rises gradually as one moves towards the northeast. The average elevation is between 1,200 and 1,600 metres above sea level. The northern highlands dip down into the Zambezi Valley while the southern highlands descend into the Limpopo River Valley. The country has mostly dry savannah vegetation. Lowlands known as the low veld make up about 20 percent of the country, lying at an altitude between 160 and 900 metres above sea level.

The effects of climate change are calling into question a common scientific practice: the division of the country into five agro-ecological zones based mainly on rainfall and soil use. Zimbabwe is divided into five natural climate zones (I to V) according to precipitation levels. Zone I receives the most rain, while Zone V receives the least. Zones IV and V comprise mostly remote areas only suitable for extensive livestock farming (a small number of animals grazing on a large piece of land). Their lower-lying areas are appropriate for intensive agriculture. The southeast province of Masvingo features grasslands and bush savannah. Sugar cane, tobacco and cotton are cultivated in these depressions, whereas the majority of the rest of the province is only suited for livestock farming.

The landscape in these zones is extremely sensitive to climate change, resulting in higher temperatures, lower precipitation and the floods brought by sudden torrential downpours. The topsoil is only a few centimetres deep.

The past few years have seen climate zones move east. The areas around the towns of Chinhoyi and Chibero used to be part of Zone II but today they are in Zone III. The natural Zone III near Kwekwe in the midlands has been transformed into Zone IV. These changes are particularly dramatic for grasslands because the new climatic conditions are turning them into bush savannah.

As already mentioned, recent years have seen recurring incidents of torrential rain and flooding. Large-scale farmers practise irrigated agriculture for which they often build small reservoirs. Of the more than 2,000 dams in the country, nearly half are privately owned. Dams built and used by local communities are subject to regular inspections. These inspections show that climate change is affecting the dams, and not just at the Kariba reservoir, where the dam wall was expected to sustain serious damage following heavy rains in February 2014. Construction of dams to irrigate large plantations, which produce sugar cane for ethanol manufacturers, exacerbates the problems of small-scale farmers nearby. Rainwater is confined behind the dams and is no longer available to the local growers.

Supplying water to households is becoming exponentially more problematic. Fewer and fewer families have access to wells and latrines. Although there are a large number of wells, many of them need new parts so they are out of operation. Ground water levels are also falling steadily. In Harare, for instance, well builders were finding water at 30 metres or less just a few years ago, but today they sometimes need to drill 100 metres or more. In some parts of the city they have drilled but not found any water at all. As a result, people have to drink dirty water and cholera outbreaks have become common.

The incidence of cholera and typhus rose again in large cities and several rural areas in December 2013 and early 2014, leading international organisations to warn of a new epidemic. Mismanagement by local authorities and corruption resulted in drinking water in Harare, for instance, not being adequately sanitised before it was piped to several low-income neighbourhoods. In late January 2014, the drinking water supply for Bulawayo, the second largest city in the country, was found to be extremely problematic. These political, economic and environmental problems are interconnected.

Zimbabwe's energy supply is fraught with serious problems right now. The country suffers from a constant energy shortage. Large cities sometimes experience power failures that last for up to 24 hours. In some rural areas the outages may continue for several days. There is currently a supply shortage of 900 megawatts owing to the fact that peak consumption is 2,200 megawatts but average production capacity only 1,300 megawatts. Zimbabwe's electricity currently comes mostly from hydropower and coal. It also imports electricity from South Africa, Botswana and Namibia. The country intends to expand its power plant capacity to 2,800 megawatts during the next few years and to 10,000 megawatts by 2040. Expanding and building new coal-fired power plants will be the primary means of achieving these goals. Chinese firms are expected to plan, execute and sometimes finance almost all of these projects. In 2013, the Government of National Unity announced that China would also be building three nuclear power plants. However, there have been no developments on this project as of now. Gas is also supposed to become part of Zimbabwe's energy mix in the future. The Lupane district has vast methane gas resources that could be developed for energy production. There are also plans to build a hydropower plant in conjunction with Zambia across the Batoka Gorge. The Zambezi River Authority, which is jointly funded by the two countries, will develop the project at an estimated cost of US$4 billion. The design features a 180-metre dam and two power plants, each with four 200-megawatt turbines. This will give it a total capacity of 1,600 megawatts. In reality, however, all of these projects have had to be suspended for financial reasons. Zimbabwe has insufficient funds in its budget for the

plans, and no investors have stepped up since the controversial elections of 2013.

Although sun-drenched Zimbabwe is a huge potential market for solar energy, there has been little use of solar power so far. The country has an average of 300 sunny days a year. That equals an annual electricity output of 2,100 kilowatt-hours per square meter. In mid-2013, Zimbabwe Power Company began planning 100-megawatt solar plants in the provinces of Matabeleland and Masvingo as short-term solutions to the country's power shortfall.

The Harare Institute of Technology (HIT) commissioned a solar-powered heating system before the 2013 elections. The pilot project for heating water with solar energy was financed and completed by the government of South Korea working through the Korean International Cooperation Agency (KOICA) in conjunction with the ministries of energy, public construction and higher education. The completion of additional large solar plants pushed Zimbabwe's Zanu-PF-led government to its financial limits.

Numerous private consulting firms now exist for small-scale private and commercial solar power users. The Chinese trade centre in Harare offers small and medium-sized systems for very affordable prices. German company Solarworld recently supplied solar systems for all of the country's toll gates.

Zimbabwe's catastrophic economic situation has pushed the entire climate debate into the background. A few NGOs are the only ones still leading and sparking the discussion. The government is mum on climate change at the moment. The general public is very poorly informed. Until just a short time ago, Mugabe's government called European countries the enemy. As a result, no one took any notice of European climate and energy policy or Germany's energy transition. Some Zanu-PF politicians even claimed that the climate debate was another colonialist tool to retake control of Zimbabwe. But as the EU resumed relations with Zimbabwe, these voices went silent. In June 2014, Denmark signed a new cooperation agreement with Zimbabwe aimed at ensuring a more secure energy supply and, more importantly, funding the implementation of the required measures. There are also new efforts to resume programmes from 2009 that worked, albeit slowly, towards cutting carbon emissions from 11,000 tonnes. Without an adequate supply of secure energy Zimbabwe's economy will continue to shrink.

Zimbabwe is not the only country in the region affected by climate change; neighbouring countries are too. As part of the SADC, they are looking for shared approaches to solving the problem. In climate and environmental research, there are regional cooperation initiatives focusing on, for instance, the areas along the Limpopo and Zambezi Rivers on Zimbabwe's border. In spite of passing an environmental management law in 2002, Zimbabwe still does not have comprehensive climate policy or a national adaptation strategy. Nor did it adapt existing laws after ratifying its new constitution or incorporate them into the new constitution's legal framework. There are a few government programmes in different sectors that address the effects of climate change. But they are now suspended due to a lack of funding. The United Nations is playing a minor role in the climate debate. But the influence of the SADC and the AU is expected to grow. Robert Mugabe will probably be presiding over both of them soon.

In addition, experts close to the government have complained that scientists from other African countries, the United States and Europe dominate the climate change debate. They have called for outside experts to "respect Zimbabwe's strategies for adapting to the effects of a possible change in the climate".

Local players are already developing ways of adapting to the consequences of climate change. All age groups are involved, and a higher value is being placed on women's knowledge of agriculture and ecology. Here, too, it is usually international NGOs sponsoring these projects.

The government of Zimbabwe has ratified or signed the following conventions and international agreements in recent years:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- Montreal Protocol,
- CBD,
- UNFCCC,
- Bamako Convention,
- UNCCD.

When talking with affected Zimbabweans, especially young members of parliament, it becomes clear that they view adaptation and prevention measures, response strategies and, above all, public information and education as the means now necessary to address climate change in Zimbabwe.

SOUTH AFRICA

Holger Dix | Jan-Wilhelm Ahmling

Among the fundamental rights guaranteed by South Africa's constitution is the right to a clean environment that is not harmful to human health and well-being. Yet according to estimates by Greenpeace International, the air pollution caused by state-run utility Eskom's coal-fired power plants alone kills 2,200 to 2,700 people each year. In Mpumalanga province, which has a high concentration of coal plants, 51 percent of all hospital stays are related to air pollution, according to information from South Africa's health ministry. There seems to be a world of difference between the nation's green aspirations and the reality for its people.

COAL: SOUTH AFRICA'S MAIN ENERGY SOURCE

South Africa is the biggest producer of greenhouse gases in Africa and one of the 15 biggest producers worldwide. Its use of coal in energy production is particularly to blame. Coal-fired power plants generate 72 percent of its energy supply, and 85 percent of its electricity comes from coal. Coal is also used to make synthetic fuels.

Coal is an affordable and important product for the South African economy. The country is home to 95 percent of Africa's coal reserves and 4 percent of global coal reserves. A low-cost, coal-based energy supply is seen as both an investment and competitive advantage by the energy-intensive industrial and mining sectors. In addition, coal mining employs 70,000 people in a country with high unemployment, especially among low-skilled workers. South Africa needs to diversify its energy mix in spite of its economy's dependence on coal, because without fundamental changes in its energy policy the country's carbon emissions will quadruple by 2050.

THE EFFECTS OF CLIMATE CHANGE

The economic importance of coal use contrasts with the impact of coal use, which is already being observed in public health in particular, but also in the country's vulnerability to the long-term effects of climate change. Long-term forecasts show temperatures rising by 1 to 2 °C on the coast and 2 to 3 °C in the interior of the country by the middle of the century. By the year 2100 they are expected to climb by 3 to 4 °C on the coast and 6 to 7 °C in the interior. This kind of warming would have a significant impact on the country's already precarious water supply as well as on agriculture, coastal settlements, biodiversity and water-intensive economic sectors like mining and electricity production. South Africa faces the challenge of preventing emissions from rising further, preparing itself for the inevitable effects of climate change and disconnecting the economic development needed to fight poverty and employment from environmentally destructive and carbon-intensive energy production and use.

ENERGY AND ENVIRONMENT IS ON THE NATIONAL AGENDA

South Africa's government is aware of the problem of climate change and has developed relevant strategies and policies. It signed the UNFCCC in 1993 and ratified it in 1997. It submitted its first report in accordance with Article 12 of the convention in 2004. The second report followed in 2011. At the 2009 UN Climate Change Conference in Denmark, South Africa agreed to cut its greenhouse gas emissions by 34 percent by 2020 and 42 percent by 2025. In 2011, it adopted a strategy for responding to climate change[1] that focuses on reducing greenhouse gas emissions and adapting to the inevitable impact of climate change. The following year, in 2012, it passed a National Development Plan that underscores the need for a sustainable low-carbon economy. Moreover, South Africa has been actively involved in international negotiations on climate change, while also emphasising that its status as a developing country would require additional financial assistance to successfully implement carbon reduction.

In South Africa, 80 percent of greenhouse gases result from inefficient energy production and use. South Africa's economy ranks as one of the most inefficient on the planet in terms of the ratio of economic output to emissions levels. As a result, South Africa's climate policy focuses on increasing energy efficiency, reducing emissions in energy production and the transport sector, and pursuing carbon sequestration. All of these measures are part of a package called the Near-Term Priority Flagship Programmes.[2]

1 | Republic of South Africa, "National Climate-Change Response", http://climateresponse.co.za [28 July 2014].
2 | Republic of South Africa, "New-Term Priority Flagship Programmes", http://www.gov.za/documents/download.php?f=152845 [28 July 2014].

The Gariep dam, the largest in South Africa, is located on the Oranje River.

Examples of concrete measures in the package include plans for more intensive use of methane gas in the waste sector, pilot projects aiming for commercial viability of CCS technology by 2025 and greater efficiency in public transport and public buildings, and funding for solar-powered water boilers in rural areas. To address rising water shortages, the government hopes to implement the National Water Conservation and Water Demand Management Strategy in almost every sector of the economy and to install water tanks for storing precipitation in rural areas. It also intends to introduce a carbon tax in 2016. According to recent plans from the finance ministry, the tax will be supplemented by a practice borrowed from carbon trading, which lets companies reduce their tax rate by investing in emissions-reducing projects.[3]

In addition to these measures within the existing energy system, the government plans to drive the expansion of renewable energies with a Renewable Energy Flagship Programme. Expanding renewables to a capacity of 18.2 gigawatts by 2030 is expected to create a total of up to 50,000 new jobs.[4]

Green energy will also be part of an energy mix aimed at reducing emissions, in which all types of energy would have almost equal weight. The government hopes to realise this new mix of energy sources by 2030. It will entail a five-fold increase in nuclear energy production versus current levels, and a four-fold increase in natural gas and biogas production.[5] There are also high hopes for fracking for natural gas in the semiarid Karoo region, which the South African government is convinced will provide significant momentum for the country's economic development.

Besides expanding these energy sources as an alternative to coal, the government intends to further develop the energy infrastructure. Its Distribution Asset Management Programme, for instance, aims to drive the expansion of the electricity grid, which is overstretched in some areas. There are also plans to build and develop a strategic fuel storage facility and to construct a pipeline from Durban to Johannesburg.

CLIMATE PROTECTION HAS LIMITED SOCIO-POLITICAL SIGNIFICANCE

The large number of climate policy measures, whether planned or already begun, are only partly an expression of the people's desire to bring about reform in this area of policy. In general, the socio-political significance of environmental conservation is limited. Of the 29 political parties that took part in the 2014 parliamentary elections, not a single one of them gave the environment top billing in its platform. The platforms of the six most powerful parties only addressed questions of environmental protection at the periphery, mainly in connection with tourism. The Democratic Alliance, the largest opposition party, was the only one to offer a plan to combat climate change, which included efficiency labels for machinery and devices, the introduction of carbon trading, improved disaster management and compensation payments for farmers affected by climate change. The scant attention given to environmental issues by most of the political parties is a reflection of the importance of these issues in society. With 40 percent of South Africans living below the national poverty line, many people have to deal with more tangible problems in

3 | Republic of South Africa, National Treasury, "Carbon Offsets Paper", 04 / 2014, pp. 6 – 7, http://bit.ly/1rGIETU [28 July 2014].

4 | Ulrike Lorenz-Carl, "Südafrika und die EU. Eine einseitige Partnerschaft" (South Africa and the EU. A one-sided partnership), Kai-Olaf Lang and Gudrun Wacker (eds.), "Die EU im Beziehungsgefüge großer Staaten" (The EU in the network of relations with large states), *SWP Study*, SWP, 12 / 2013, pp. 77 – 87, here: p. 84., http://swp-berlin.org/fileadmin/contents/products/studien/2013_S25_lng_wkr.pdf [28 July 2014].

5 | According to information from the Ministry of Energy, the energy mix targeted for 2030 is: 17 percent nuclear, 17 percent solar, 16.3 percent wind, 12.9 percent gas, 7.2 percent hydro, 29.7 percent coal.

their day-to-day lives and fail to see a need for climate protection.[6] As a result, the debate over climate change takes place largely between the government and civil society organisations that are active in the environmental arena.

In addition, South African businesses are beginning to deal with the topic of climate change, particularly as it relates to energy efficiency. The National Business Initiative (NBI) has chosen climate change and energy as one of its three focus areas.[7] Some 44 groups have already stepped forward and signed the NBI's Energy Efficiency Accord, including Eskom and Sasol, far and away the country's largest producers of emissions.

SOUTH AFRICA'S INTEREST IN GERMAN POLICY AND EXPERTISE

Climate policy and energy policy have been a focus of Germany's development cooperation with South Africa since 2008. The two countries see each other as strategic partners in climate change negotiations and energy cooperation. Germany's energy transition is mostly seen in a positive light because it is expected to lead to greater technology transfer and learning outcomes for South Africa. While there is widespread doubt about the feasibility of Germany's energy transition and whether it can be transferred to South Africa, people also say that if anyone can do it, Germany can.[8]

South Africa and Germany began a bilateral partnership for climate development and energy in 2013. Its objectives include expanding the use of renewable energies and the reach of electricity grids, improving energy efficiency and promoting CCS technology. In addition, Germany funds climate protection projects in South Africa through the environment ministry's International Climate Protection Initiative, including projects for swampland conservation, deployment of renewable energy in metropolitan areas and programmes to promote solar energy and wind power.

In conclusion, it can be said that South Africa has made great strides in recent years in spelling out policies towards recalibrating its climate and energy policy. Having COP17 take place in Durban in 2011 certainly contributed to this. The real challenge to the government will be implementing these policies, as South African climate policy will lead to an increase in energy costs in the short and medium term. Many poor South Africans, who were among the most important supporters of the governing coalition during the most recent elections in April 2014, will probably be opposed to that.

6 | Cf. Leslie Masters, "The Road to Copenhagen: Climate Change, Energy and South Africa's Foreign Policy", SAIIA Occasional Paper, No. 47, 10/2009, South African Institute for International Affairs (SAIIA), p. 22, http://saiia.org.za/occasional-papers/the-road-to-copenhagen-climate-change-energy-and-south-africas-foreign-policy [28 July 2014].

7 | National Business Initiative (NBI), "Climate and Energy", http://www.nbi.org.za/Focus%20Area/ClimateAndEnergy/Pages/default.aspx [28 July 2014].

8 | Cf. Christian Hübner, *The Perception of Germany's "Energiewende" in Emerging Countries. Results of qualitive interviews on Germany's transformation of the energy system in Brazil, China and South Africa,* Konrad-Adenauer-Stiftung, Berlin, 07/2013, http://kas.de/wf/en/33.34940 [28 July 2014].

DEMOCRATIC REPUBLIC OF THE CONGO

Steffen Krüger

CLIMATE AND ENERGY POLICY POSE CHALLENGES FOR DEVELOPMENT POLICY

The Democratic Republic of the Congo (DRC) covers an area of 2.34 million square kilometres and has a rapidly growing population. During the last five years alone, its population has grown by over 15 percent to more than 75 million people. Recent years have seen numerous political and military conflicts, which have made the DRC one of the world's poorest countries. In contrast to other parts of Africa, which are already experiencing serious droughts, food shortages, cyclones, flooding and desertification, the DRC has only felt minimal effects from climate change. This can be explained by its relatively low population density and modest industrialisation.

The public debates that take place on climate and energy policy usually revolve around the difficult relationship between environmental protection, economic development and food security. These debates are usually sparked by the many problems facing the country, which especially affect the poorer classes of society. Such problems include drinking water provision, forest clearing and food supply difficulties.

THE IMPACT OF CLIMATE CHANGE IN THE DRC

The African country with the greatest abundance of water has a drinking water problem. Only around 26 percent of the population has access to potable water. This puts the DRC far below the African average of 60 percent. Moreover, samples taken by UN environmental workers have shown that drinking water is often contaminated with harmful bacteria. In urban areas this is usually caused by a shortage of well-maintained water sanitation plants and the general pollution of ground water and river water. People in urban areas commonly throw rubbish in rivers or – if any exist – in the waste water systems. Their bottles, plastic bags and other waste have poisoned the rivers, leaving very few fish or plants in urban waterways. In some places the mountains of trash that fill the rivers are so big that people can use them as bridges. In rural areas, soil erosion and deforestation are further reducing drinking water resources.

Forest clearing in the DRC also entails other environmental risks. The DRC has 167 million hectares of forest, making it the one of largest forested areas in world. As a result, it is often – like the Amazon rainforest – described as one of the Earth's lungs. If carbon emissions from agriculture and logging are included, the DRC ranks among the top 25 carbon emitters in the world. Its forests therefore play a large role in international treaties. The negotiations focus on cutting greenhouse gases by limiting the use of fossil fuels and reducing deforestation. The production and use of charcoal is another major problem for the DRC's natural environment. The extent of the clearing of large forested areas to make charcoal is most apparent just outside urban areas. Many tonnes of charcoal are used each day to prepare food in the capital Kinshasa alone. Every day hundreds of trucks loaded with charcoal drive in from the countryside to sell their charcoal at city markets. Charcoal is more lucrative than agriculture, so more and more farmers are clearing forests to produce it. The process makes the land virtually unusable, and so it goes to waste.

Forestry – whether of the industrial or artisanal variety – is one of the biggest branches of industry in the Democratic Republic of the Congo. The local authorities have trouble controlling the maze of artisanal forestry groups. But industrial forestry poses a greater problem for the DRC's forests. Corruption and mismanagement make it easy for illegal operators to export valuable tropical woods and sell them with fake papers on the international market. Now and then the national government shuts down illegal export channels and operations. But the sector is very chaotic. Logging concessions are often used multiple times or sold. In many cases, legislation is unclear and government institutions are weak, which further facilitates corrupt business practices.

The third problem that has been accelerated by environmental damage involves supplying the people of the DRC with food from agriculture. Only 3 percent of the land in the DRC is used for farming, but over 60 percent of the workforce is employed in this sector. Most of these are subsistence farmers, whose land is increasingly affected by heavy rains, soil erosion and shifting rainy seasons. Some agricultural products need to be imported from other countries to meet local needs.

ENERGY POLICY AND ITS POTENTIAL

The Congo River is immense in terms of the volume of water it discharges and also features swift currents and rushing water. Equipped with appropriate hydropower plants, it could supply a large part of the continent with electricity. Yet this is not what is happening, unfortunately. There are currently only a few antiquated hydropower plants that provide the most important cities and raw material mines with electricity. During the dry season, when water levels are low, there are times when they cannot supply any electricity at all. Mismanagement at state power companies is causing electricity costs to rise higher and higher.

Almost every member of society is affected, so there are plenty of debates on these issues in the DRC, especially from an economic perspective. The poorer segments of the population are most affected by these problems, but they cannot expect much from their government. The debate over climate change primarily takes place in relevant government ministries and committees. Their focus is usually on development cooperation projects and international agreements for environmental protection in the DRC.

CLIMATE CHANGE IN THE INTERNATIONAL CONTEXT

Due to its vast wooded areas, the DRC is an important partner for the REDD mechanism. The basic idea behind REDD involves measuring and monetising the carbon stored in forests to make protecting wooded areas as profitable as clearing them. Affected countries are to receive payments for conserving their forests. One hectare of rainforest can store up to 180 tonnes of carbon, and clearing the same area releases about 100 tonnes of carbon. REDD was upgraded to REDD+ in 2007 and consists of three phases. The first phase involves non-performance-based support, which is followed by results-based demonstration activities. In the third phase, REDD+ countries receive results-based funding. However, the international community still has questions about the funding and how the results are to be measured. Such measurements can be very expensive, especially for forested areas as large as those in the DRC. Poor administration and weak rule of law mean that the governing elite may siphon off a portion of this additional funding that is designed to protect the tropical rainforests. Recent years have seen the creation of a series of funds and initiatives to finance and implement the REDD mechanism. Yet experts have criticised the responsible international organizations for poor internal coordination.

Replanting indigenous tree species on cleared areas in Mai Ndombe, located in the Bandundu province. The REDD+ project is designed to secure the livelihoods of people living in the project area over the long term while stopping the destruction of this species-rich rainforest habitat.

Beyond REDD, there are many other projects that deal with energy and climate issues in a broader sense. They cover items such as environmental protection projects in the national parks, increased access to clean drinking water and electricity, and improvements in agriculture. These projects are accompanied by continuing education courses at universities. The DRC government is currently working on plans to build a new hydropower plant with international support, and negotiations are under way in the region to divert water from the Congo River so that the water level in Lake Chad returns to normal.

Beyond this, the DRC government does not have any further policies on climate change or specific strategies for their deployment. Experts in relevant ministries are aware of Europe's climate and energy policy, but the DRC government's plan is focused more on preparing and securing the country's energy supply.

THE DRC'S POSITION IN MULTILATERAL CLIMATE POLICY

The DRC is part of the African Group of Negotiators (AGN), which meets before every UN climate summit to adopt a common position. At the summits, African countries normally negotiate as part of the Group of 77 plus China, or as part of the Least Developed Countries Group. In the past, the DRC has lobbied for technical support from industrialised countries to protect the natural environment in the DRC and appealed for funds to offset losses incurred during recent events tied to climate change.

UGANDA

Angelika Klein

Although the impact of climate change is evident and the general public are more aware of changing weather phenomena, the subject of climate change only plays a small role in Uganda's public discourse.

In spite of that, Ugandan politicians are quick to point to large industrialised nations and their carbon emissions when it comes to the impact of climate change. Yet people are increasingly coming to the conclusion that many problems have their roots within the country. A growing number of civil society organizations with greater awareness are becoming more effective at informing the people about undesirable internal trends and mobilising them to resist them. In one example from 2007, large protests took place in Kampala to oppose a government plan to sell about a third of the Mabira rainforest, Uganda's largest remaining tropical rainforest, to a private investor who planned to turn it into a sugar cane plantation. The "Save Mabira" movement was born, and the protests became a political issue that led to a massive boycott of sugar products made by the company behind the plan (Sugar Corporation of Uganda Ltd., SCOUL). It was a success at the beginning, but President Museveni did not give up on the plan. He put it back on the agenda four years later, and now sugar cane is growing on what was once wooded terrain.

This awareness of the topic has been accompanied by the creation of political institutions intended to focus on the issue of climate change and related phenomena. The Climate Change Unit (CCU) was founded in response to the insight that not only has Uganda been and will be greatly affected by weather phenomena, but also that as one of the world's least developed countries it is limited in how it can respond to them. The environment ministry set up the CCU in 2008 with the primary task of implementing the UNFCCC and the Kyoto Protocol. The CCU also has the job of developing a Climate Change Policy that defines which measures can and must be taken in Uganda to slow climate change and prevent avoidable consequences. Another political institution working on the issue of climate change is the Parliamentary Forum on Climate Change (PFCC), which was also founded in 2008 as one of the first of its kind in Africa.

ENERGY POLICY – THE NILE IS KEY

Uganda is attempting to achieve energy security mainly by making greater use of hydropower along the Nile. It hopes to do this by means of three hydropower plants – Owen Falls Dam, Nalubaale Dam and Bujjagali Dam, the last of which was funded with German development aid. Support from China will help Uganda build a fourth dam in in the northern town of Karuma. However, for the hydropower plants to be used effectively, one basic requirement must be met: they must receive a regular, adequate supply of water from the Nile, and ultimately from Lake Victoria, which feeds into the Nile. But this is by no means guaranteed. Unreliable rainfall has caused water levels to rise or fall unpredictability, which in turn influences the productivity of the hydropower plants. Recurring droughts in particular have caused water levels to fall low enough to no longer be able to drive the power plants and generate adequate energy. Combined with steadily rising demand for electricity, this commonly results in severe energy shortages and power failures. This situation has motivated the government to diversify the national energy supply. Its Vision 2040 strategy relies primarily on nuclear power to achieve this. In addition, Uganda passed an energy policy in 2002 that aims to secure the energy needed for the country's economic and social development in an environmentally sustainable manner. A strategy paper on renewable energies in which Uganda's government commits itself to developing and using renewables underscores the environmentally conscious goals of the energy policy.

At the international level, the energy security issue has often created tension between Uganda (where the White Nile has its source) and other countries that share the Nile, especially Egypt. When the water level in Lake Victoria fell significantly in 2002, Egypt stepped up its efforts to monitor water use and intruded on Ugandan territory.

Debates of the kind that take place in Europe, which combine energy security issues and geopolitical considerations, only take place on the periphery in Uganda if they take place there at all. The country has discovered oil, and although no decisions have been made about funding or the distribution of profits, simply the presence of this and other resources is perceived as a hedge, and this stops both the people and the government from worrying about potential dependence on other countries.

MULTILATERAL CLIMATE POLICY

Uganda became a party to the UNFCCC and signed the Kyoto Protocol. It is also a member of the Conference of Parties, which is committed to the CDM. The agency in Uganda that is responsible for these matters is the Climate Change Unit mentioned earlier. Its job it is to ensure compliance with the agreements to which the country is a party. Uganda also uses various international climate protection instruments, such as REDD+. However, the bulk of climate measures are funded by bilateral partners – particularly the UK, Norway, Denmark and Belgium – without whose support they would be disregarded.

At the COP19 in Warsaw, Uganda joined other African states in demanding a new and legally binding climate protection treaty to take effect after 2015. They were acting on the assumption that African countries are not the main sources of climate change and yet appear to be most affected by it. In the same vein, African countries have requested compensation as well as additional financial and technical support from industrialised countries in return for efforts to mitigate climate change. Uganda is among those suing for an African Climate Change Fund to be set up for this purpose. By contrast, most of its attempts have stopped at rhetoric and only take shape with the help of foreign aid anyway, if they take shape at all.

In summary, although Uganda has repeatedly emphasised its commitment to protecting the environment and mitigating the effects of climate change and has signed treaties to show its commitment, for the most part it has done nothing to back up its words. Again and again, ecologically sensitive areas fall to ambitious investment projects. Meanwhile, the Climate Change Unit is still funded exclusively by foreign donors while national and local money has little or no stake in it. Furthermore, the focus of the government as well as the people is on rapid industrialisation at the lowest possible cost – regardless of the danger of long-term negative impacts on the environment.

WEST AFRICA (BENIN, TOGO, BURKINA FASO, NIGER)

Elke Erlecke

CLIMATE CHANGE BETWEEN THE SAHARA AND THE ATLANTIC: COUNTRIES IN THE REGIONAL PROGRAMME "POLITICAL DIALOGUE IN WEST AFRICA"

Climate change is everywhere. In all of the countries in the regional programme, it is seen as an urgent problem that affects every area of life. Climate change has many faces. Flooding, coastal areas being washed away, cities and capitals in danger of disappearing, drought, famine and desertification. People inside and outside government are taking action. Its multidimensional nature has enabled it to leave a mark on the psyche of every part of society, regardless of whether they are directly or indirectly affected by it. In areas that are highly dependent on precipitation, such as the countries located in the Sahel (Burkina Faso and Niger), people are reacting strongly to the increasing unpredictability of the climate.

The crisis in the Sahel his also brought the long-simmering conflict between nomadic and sedentary peoples back into the public spotlight and with it the debate over the use of fertile land. Accelerating desertification is making the conflict worse. These products of climate change, combined with current security policy and terrorism challenges, make the Sahel an extremely vulnerable area.

The region has recently recognised that the phenomenon cannot be addressed through isolated national actions alone. National legislation has been inspired by international guidelines, and international climate summits have resulted in action plans at the national level, communication strategies adapted to the unique conditions in these countries and the development of evaluation mechanisms to assess climate change as it evolves. The 1992 UN Earth Summit in Rio de Janeiro in particular brought a fundamental change in the region's awareness of the importance of environmental issues for national development. Direct consequences included linking good governance to an active civil society; integrating climate issues in every level of government planning processes and government strategies, such as those to fight poverty; and assigning climate policy to a ministry with a key portfolio (finance or planning) in order to ensure that the issue remains on the agenda.

Togo was among the first to sign the Kyoto Protocol in 1997. Prior to that, it signed the UNFCCC in 1995 and pledged to help stabilise emissions to restore natural equilibrium. Kyoto resulted in a far more successful mobilisation of national policy capacities in the programme countries. It also led to a greater understanding of the interrelatedness of environment and development issues. Togo's 2011 National Investment Programme for the Environment and Natural Resources was followed in 2014 by a National Adaptation Plan for Climate Change that was prepared in cooperation with GIZ.

CLIMATE FORECAST FOR TOGO

Togo serves as an example of how climate change affects the lives and livelihoods of people in every part of the country. On the coast from Kossi / Agbavi to Aneho, the peninsula there is in danger of disappearing as a result of a steady rise in sea levels. Flooding and salination of wells are a threat in the southern and eastern parts of the Plateaux region. The north is experiencing climate change in the form of shifting seasons. Unpredictable rainy periods are leading more and more farmers to migrate to the south.

In an abandoned area in Togo's Agou administrative district, people are reforesting a 1,000-hectare nature reserve. Saplings of the indigenous tree species neem, kapok and iroko are grown in nurseries until the end of the rainy season.

Togo continues to gear up for nuclear power. In 2012, Togo's government concluded a non-proliferation treaty with the International Atomic Energy Agency.

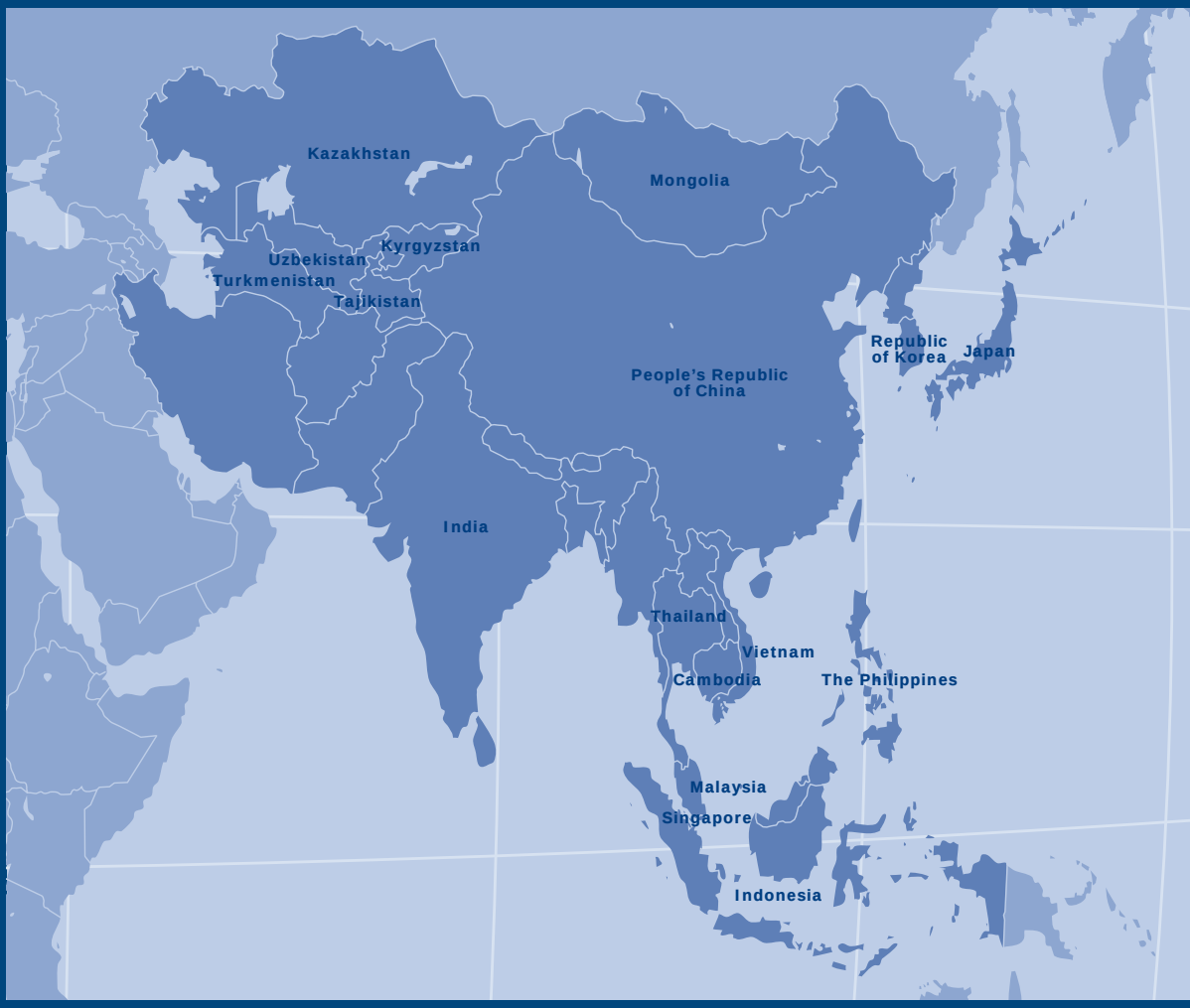
Niger is climate policy pioneer in the Sahel region. The country opted for a responsible climate policy early on and declared it a primary task in the government's activities. The prime minister's Conseil National de l'Environnement pour un Développement Durable reflects this. Its tasks have included putting together a national plan for sustainable development.

Due to Niger's intense involvement in the uranium trade, there is strong public and government interest in the switch to renewable energies and the consequences that shutting down reactors will have for international trade in uranium. Due to Niger's close involvement in the UN's key development projects, the country ascribes an important role to the United Nations and considers it a pacesetter in the international debate on climate change.

Burkina Faso was quick to respond to the first signs of major climate changes. This Sahel nation did not hesitate to sign the various framework conventions (e.g. against desertification, for biodiversity) that followed from the Earth Summit. Besides integration in international climate policy, practical local experiences have prompted the country to develop its own approach to meeting energy needs. Negative experiences with rigorously executed reforestation concepts revealed that achieving energy security for the country while also mitigating climate change would require hastily abandoning traditional forms of energy (charcoal). National energy policy has since been seen as a cross-cutting task and has focused on the use of renewable energies (solar power and biofuel) for a long time now. It has also found its way into the national development strategy, Burkina 2025.

As in all other programme countries, the German energy transition has yet to generate a response in the public debate in Burkina Faso. Fukushima has no relevance for ordinary citizens here – not to mention the fact that they do not see a link between their own actions and climate change. The political class has not reacted to the German energy transition either.

Benin is an example of successful execution of the global targets contained in the framework conventions, from a national strategy through to local focuses. Without the national level, for instance, a sector-based approach to solving climate problems will achieve nothing. Developments at the national level also influence how the climate issue is treated at the international level. This is crucial when it comes to fighting flooding on rivers that cross national borders. Since 2005, Benin's policies have been oriented towards a national strategy for sustainable development. Yet voices in civil society, the media and academia have criticised the government for failing to adequately involve the people of Benin. They say that a national strategy that lacks even parliamentary support does not deserve to be called a national strategy, adding that formally integrating the strategy into the country's development strategy, Benin – Alafia 2025, does nothing to change the situation.



ASIA AND THE PACIFIC

PEOPLE'S REPUBLIC OF CHINA

Peter Hefele | Lou Chen

The People's Republic of China has now eclipsed the United States as the largest emitter of climate-damaging gases, while its carbon emissions per capita have also overtaken those in Europe. If China does not dramatically change its energy policy and growth strategy, the chances of altering the course of global climate policy are slight. The goals, of course, are clear. At the 2013 UN Climate Change Conference in Warsaw, German Chancellor Angela Merkel stated that in the long term it was clear that each inhabitant of Earth would only be allowed to emit around two tonnes of CO_2.[1]

To date, China has been extremely hesitant to commit to internationally binding contracts that would have radical implications for its own "climate behaviour". It bases its approach on, among other things, decisions taken at the Rio Conference in 1992, when the principle of common but differentiated responsibilities (CBDR) was first established.[2] Nevertheless, in Warsaw there was general agreement that a future climate protection agreement should apply to all parties. During the tough negotiations in Warsaw, major developing and newly industrialised countries like China and India fought long and hard against any significant changes.[3]

At the Conference on Energy Security and Climate Change, organised by the Konrad-Adenauer-Stiftung in 2013, Chinese delegates demanded a completely overhauled negotiating approach for renewed climate debate in order to establish a successor to the Kyoto Protocol. For them, this included consideration of the individual sectors within each national energy system. They stressed that this should not only take technological developments into account, but also energy consumption habits.[4]

Air pollution in Shanghai: the smog in major Chinese cities is having adverse effects on human health.

GROWING PRESSURES, NEW INCENTIVES

The Chinese population is becoming more aware of environmental problems as a result of conspicuous consequences such as the dramatically declining air quality and the increasing desertification of large swathes of land. It has become part of daily life for many Chinese people – not only foreign residents of China – to check the air quality via smartphone apps. They are also alarmed by the news of increasing occurrences of lung cancer in highly polluted areas of northern China.

The government and the Party are well aware of the explosive potential of these developments and are attempting to face up to the challenge by introducing measures at various levels. After initial resistance, the government is now posting the official air pollution levels in most Chinese cities online in real time.

Beijing and some other cities have published Five-Year Plans (2013–17) for cleaning up the air. For instance, Beijing aims to reduce levels of PM2.5 – particles smaller than 2.5 micrometre in diameter that can penetrate into the lungs – by at least 25 percent by 2017. The increasing use of private vehicles has made a considerable contribution to the emission of harmful gases. That is why cities like Beijing are increasingly beginning to limit vehicle numbers and to promote electromobility and the expansion of public transport systems.[5]

1 | Cf. Wikipedia, "UN-Klimakonferenz in Warschau 2013" (Climate Change Conference in Warsaw 2013"), http://de.wikipedia.org/wiki/UN-Klimakonferenz_in_Warschau_2013 [28 July 2014].

2 | Cf. Global Policy Forum (GPF), "Neuer Report: Gemeinsame Ziele – unterschiedliche Verantwortung" (New Report: Common Goals – Differentiated Responsibilities), 11 March 2014, http://bit.ly/1m1ZPNa [28 July 2014].

3 | Cf. Markus Becker, "Uno-Klimakonferenz: Drama Sekunden vor dem Hammerschlag" (UN Climate Change Conference: Drama seconds before the knock of the gavel), *Spiegel Online*, http://spiegel.de/wissenschaft/natur/a-935263.html [28 July 2014].

4 | Cf. "Energy Security and Climate Change. Challenges for Politics and Law in China and Europe", event publication, Konrad-Adenauer-Stiftung Shanghai, 13 September 2013, http://kas.de/china/en/publications/35386 [28 July 2014].

5 | The Beijing city government aims to limit the total number of vehicles to approx. 6 million by the end of 2017, of which 200,000 electrical vehicles. Cf. "Beijing geht entschlossen gegen Luftverschmutzung vor" (Beijing resolute to combat air pollution), China Internet Information Center (CIIC), 27 September 2013, http://german.china.org.cn/china/2013-09/27/content_30154613.htm [28 July 2014].

Since 2013, seven regional pilot emission trading systems (ETSs) have been introduced in order to motivate companies to invest in low-emission production processes. A national ETS is set to join these in 2016.[6] The first pilot project of this kind was launched in Shenzhen in Guangdong Province. The first step in the scheme was making 638 companies and the operators of 200 primarily public buildings earn a CO_2 certificate. These organisations, responsible for 38 percent of Shenzhen's total emissions,[7] are now required to present authorisation for every tonne of CO_2 that they emit, although some permits are issued free of charge. If they emit more harmful gases than permitted, they must obtain additional certificates from other companies. If they emit less than the maximum allowed, they can sell their excess permits and thus earn money.[8]

Chinese NGOs are also becoming a force to be reckoned with within the national climate debate. They have contributed to heightened public awareness through a wide range of different activities at the local level. The Institute of Public and Environmental Affairs (IPE) in Beijing, for instance, has published a China Pollution Map that monitors environmental pollution and pinpoints it sources. These new developments have their political and environmental basis in the Chinese government's Five-Year Plan for 2011–15, which was recently substantiated by decisions taken during the Third Plenary Session of the 18th Central Committee of the Communist Party of China in November 2013. The government intends to provide a massive impetus to transform the Chinese economy. Li Wei, head of the influential Development Research Center of the State Council, has stated that by 2030 China should be transformed into a country with a "secure, green and efficient" system of energy production.[9] But even now, conflicts are emerging between social stability, economic growth and a "green economy".

DOES ENERGY SECURITY TRUMP CLIMATE PROTECTION?

Although the Party has emphasised the importance of the markets for the efficient use of resources, in the foreseeable future energy policy and energy security will remain, for the most part, firmly under state control. Resistance to privatisation and liberalisation is massive within the monopolistic Chinese energy market, meaning that these structures have rather tended to retard any transformation of the energy system.

They base their stance on energy security arguments. After all, by 2020 the amount of imported oil could increase to as much as 75 percent of domestic consumption (around eight billion tonnes) unless China is able to dramatically improve its energy efficiency. At the moment, however, this does not seem likely – or rather, any improvements are successively cancelled out by constant increases in consumption.

China is currently still very much dependent on supplies from the politically unstable Middle East. It is therefore attempting to draw its oil from a wider range of sources including Africa, Latin America, Russia and central Asia. There are also plans to make better use of domestic resources. Nine large synthetic natural gas facilities are to be constructed in northwest China and Mongolia in order to take some of the burden off the polluted mega-cities on China's east coast. For the time being, China's own coal will remain the number one energy provider in the country. However, total coal consumption is set to peak by 2020 and to be limited to a maximum three billion tonnes by 2030. Within the same period, oil consumption is to be limited to 650 million tonnes. China is also looking at fracking options, having seen this method of natural gas extraction successfully employed in the United States. However, fracking is not expected to make a major contribution to energy supply in the coming years as the technology is not yet adequately developed.

China's new energy security approach also entails new military concepts such as the expansion of naval warfare capacity to include a blue-water navy and the projection of Chinese military might outside the immediate region.

6 | Cf. Tianbao Qin, "Climate Change and Emission Trading Systems (ETS): China's Perspective and International Experience", *KAS CHINA publications*, No. 102 (en), Shanghai, 2012.

7 | Jan Willmroth, "Emissionshandel: China probiert ein bisschen Klimaschutz" (Emission Trading: China tries out a bit of climate protection), *Wirtschaftswoche Green*, 4 June 2013, http://green.wiwo.de/emissionshandel-chinas-probiert-ein-bisschen-klimaschutz [28 July 2014].

8 | Cf. "China startet erstmals Emissionshandel" (China embarks on emission trading for the first time), *Zeit Online,* 18 June 2013, http://zeit.de/wirtschaft/2013-06/China-Klima-Emissionshandel [28 July 2014].

9 | Cf. Fu Peng, "China Focus: China ponders energy strategy", 13 February 2014, Xinhua, http://news.xinhuanet.com/english/china/2014-02/13/c_133112237.htm [28 July 2014].

CAN GERMANY BE AN EXAMPLE?

Chinese observers are keeping a close eye on the discussions in Germany about the energy transition and the adaptations it requires to technical infrastructure and the legal framework. They are also interested in the economic incentives. Although many Chinese doubt that Germany's ambitious consumption reduction targets and its planned energy mix can be realised within the specified time frame, there is hope that Germany's experiences can provide an important impetus for China's own future energy policy. The Federal Republic of Germany and the People's Republic of China are already engaged in close bilateral cooperation in the areas of climate protection and renewable energies. However, there is a general assumption in China that over the coming decades most of the country's energy will come from fossil fuels (particularly coal) and, increasingly, nuclear power. There is a fundamental difference in thinking inherent in the Chinese and in the German / European energy and climate policies.

INDIA

Lars Peter Schmidt | Mareen Haring

As a rapidly growing emergent economic powerhouse with about 1.2 billion inhabitants[1], in the coming years and decades India will face the drastic ecological consequences of industrial pollution and global climate change. In recent years, millions of Indians have suffered from extreme variations in precipitation and temperatures and from an increased number of natural disasters. Considerably more than half of the Indian population – around 800 million people – work in agriculture and are thus directly affected by the whims of nature; they are dependent on a stable climate. Over the past several years, the Indian government, NGOs and scientists have made a concerted effort to develop scenarios that demonstrate to what degree and in what places India is vulnerable to climate change and that suggest how it can respond to these challenges. Various instruments are coming together in the attempt to save India from a climate catastrophe. They include the National Action Plan of Climate Change (NAPCC), the State Level Action Plan on Climate Change (SAPCC), the REDD+ strategy, and the Expert Group on Low Carbon Strategy for Inclusive Growth. However, their efforts have met with little willingness to implement change in the highest echelons of government. Although countless reforms over recent decades should have transformed India's predominantly state-owned energy sector into a market-oriented system with space for both public and private companies, complete liberalisation of the Indian energy sector has been hindered by political complexities, a long-held tendency towards economic socialism and the new government's clear priority of making the energy programme a national prestige project. All this has led to suboptimal results.

During Manmohan Singh's tenure as prime minister, the Indian government focused particularly on development and economic policy matters. Following the parliamentary elections in May 2014 and the decisive victory of Narendra Modi and his Bharatiya Janata Party (BJP), it remains to be seen how the new government will tackle national problems such as a lack of infrastructure particularly in rural areas, an increasing demand for energy from the growing middle classes and the consequences of environmental pollution. In its manifesto, the BJP states that the development of the energy infrastructure, human resources and modern technologies will play a central role in the Indian nuclear programme. It believes that energy efficiency and conservation are important parts of energy security. It therefore intends to take steps to maximise the potential of oil, gas, hydropower, wind energy, coal and nuclear power.[2] Climate and environmental programmes are to be integrated into the national development paradigm, although India will continue to work towards shedding its status as an emerging economy. Sufficient energy will be required to increase India's economic output, while the rapidly growing middle classes will require more energy to power their newfound lifestyles – and their heightened consumption will contribute to environmental pollution. It is the responsibility of the Indian population and Indian companies to control the increased demand for energy in response to climate change,

1 | Republic of India, Ministry of Home Affaires, http://www.censusindia.gov.in [31 July 2014].

2 | "Election Manifesto 2014", http://bjpelectionmanifesto.com/pdf/manifesto2014.pdf [31 July 2014].

A wind farm near Tirunelveli in the southern Indian state of Tamil Nadu.

but it is the responsibility of the Indian government to improve energy stability, access to energy and efficiency of energy supply – while also keeping carbon emissions as low as possible. In 2011 the energy mix in India was 57 percent coal, 19 percent hydro, 12 percent biomass and other renewable energies, 9 percent gas, 2 percent nuclear, and 1 percent diesel.[3] In order to achieve India's controversial targets, more renewable energies must be included in the energy mix and other clean energy sources must be exploited.

In 2013, at the invitation of the then German federal environment minister, Peter Altmaier, India joined the Renewables Club, whose other members include Germany, France, the UK, Denmark, Morocco, South Africa, China, Tonga and the UAE. The goal of this political grouping is to promote the expansion of renewable energies across the globe, and its members aim to work together to keep the renewables theme on the political agenda.

Even in the wake of the Fukushima nuclear disaster, the Indian government still tends to view security policy and climate policy as two separate entities. It is initiating new nuclear power plant projects to ensure that 25 percent of Indian electricity needs can be covered by nuclear energy by 2050.[4]

Although the security risks of climate change are considered in India's climate policy, they play only a minor role in its security policy. India is reluctant to get involved in foreign conflicts, partly to avoid putting energy imports at risk, as these are particularly crucial for the country as a whole and for its energy security. In the current Crimean crisis, India has come down on the side of Russia: "There are legitimate Russian and other interests involved and we hope they are discussed and resolved."[5] This statement could be explained by the existence of Indo-Russian energy partnerships.

MEDIA ATTENTION AND PUBLIC PERCEPTION

Media reporting on the environment and climate change in India

The India media are becoming particularly interested in the topic of climate change since it was placed on the agenda of national and international politics. Even national daily newspapers and various magazines report – sometimes very critically – on India's strategies on the national and international arena, triggering debates and instilling a questioning attitude among the population. According to a study by Yale University, 69 percent of the Indian population follows the debates on climate change and environmental problems, at least sporadically. In this regard, the media have a great responsibility as more than two-thirds of the population has a high level of trust in media reporting; only expert opinions are deemed even more reliable.[6]

A study by the Centre for Science and Technology Policy Research (CSTPR) found that most media reporting on climate change and environmental problems takes place when there is extreme weather and before, during and after a UN Climate Change Conference.[7] This was particularly the case with COP15 in Copenhagen in 2009.

3 | U.S. Energy Information Administration, "India. Overview", 26 June 2014, http://eia.gov/countries/cab.cfm?fips=in [31 July 2014].

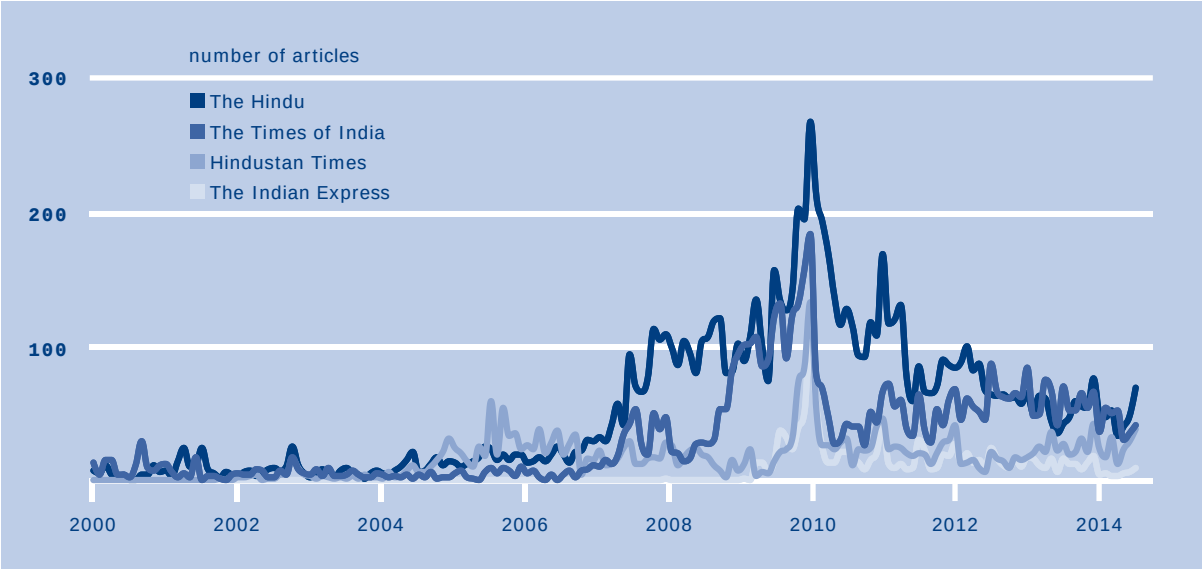
4 | World Nuclear Association, "Nuclear Power in India", 30 July 2014, http://world-nuclear.org/info/Country-Profiles/Countries-G-N/India [31 July 2014].

5 | Cf. "Putin thanks India for its stand on Ukraine", *The Hindu*, 18 March 2014, http://thehindu.com/news/international/world/putin-thanks-india-for-its-stand-on-ukraine/article5800989.ece [31 July 2014].

6 | Anthony Leiserowitz and Jagadish Thaker, "Climate Change in the Indian Mind", Yale Project on Climate Change Communication, http://environment.yale.edu/climate-communication/files/Climate-Change-Indian-Mind.pdf [31 July 2014].

7 | Cf. Maxwell T. Boykoff and Ami Nacu-Schmidt, Cooperative Institute for Research in Environmental Sciences (CIRES), Center for Science and Technology Policy Research (CSTPR), University of Colorado, 2013.

FIG. 1: REPORTING ON CLIMATE CHANGE BY MAJOR INDIAN NEWSPAPERS



Source: L. Gifford et al., "World Newspaper Coverage of Climate Change or Global Warming, 2004–2014", Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, 2014, International Collective on Environment, Culture & Politics, http://sciencepolicy.colorado.edu/icecaps/research/media_coverage/india [28 July 2014].

Media and policy

The Indian media draw a distinct connection between the environment and related issues of economic growth, trade and foreign policy. There has been a particularly keen focus on the international climate debate and the most recent UN Climate Change Conferences, with particularly vehement emphasis on how India should not agree to any binding goals. To a large degree, the Indian media have reflected their country's stance, which is that historic responsibilities should form the basis for deciding each country's commitment to the global climate regime. Most Indian media reporting is based on the principle of common but differentiated responsibilities for climate change. They suggest that developing countries should not have to make any binding commitments, as historically their emissions are much lower than in the developed world. Commitments of this kind, they argue, would impede economic growth. Given the predominant goal of ensuring the basic needs of the population are met, the Indian media regard any such steps with distinct scepticism. They consider that the greatest climate policy conflict is between the industrialised nations and developing countries, and India has declared solidarity with the latter. It considers the positions of these two groups as irreconcilable.

Local environmental problems

But it is not only international negotiations that attract the attention of the media; increasingly, although not excessively, they are also getting interested in local and regional environmental problems. The new trend for journalists to report on local projects that are harming the environment, such as mining in ground water-dependent areas, is bringing local problems to the national arena and attracting the attention of other Indian states, for a little while at least. Despite this increased reporting, local environmental problems and climate change are often quickly dropped once again by the media, and it is rare for such problems to be taken up by policy makers. The Indian media thus have a duty – to produce targeted reporting on local problems of relevance for the climate in order to awaken the interest of the relevant community and, through their persistence, to get the topic onto the local political agenda and then onto the national agenda. In this way, the media can make a contribution to sustainable environmental policy.

INDONESIA

Jan Woischnik

2014 is a “super election year” in Indonesia, with voting taking place for the presidency and the national parliament. It is striking, therefore, how little the topic of climate change features on the general political and public agenda. Popular awareness of the topic has increased since the UN Climate Change Conference in Bali in 2007, and regulations have been developed, such as the National Action Plan on Emission Reduction (RAN-GRK), based on the main points submitted to the UNFCC in Indonesia’s nationally appropriate mitigation action (NAMA). However, the primary intention behind these formal steps is to improve Indonesia’s international image; the topic is not a priority at the provincial and local levels. One positive development, on the other hand, is the increased frequency and popularity of public attention-grabbing campaigns such as Bike to Work days, Earth Hour, Plastic Diet and My Baby Tree. The initiators of these activities have managed to attract the attention of the whole country – including the media.

Political parties, however, barely mention topics like climate change and nature conservation. None of the twelve parties admitted to the parliamentary elections on 9 April addressed the topic of climate change in their electoral campaigns, and this despite the fact that Indonesia, an archipelago made up approximately 17,000 islands, is likely to particularly bear the brunt of its consequences. The same applies to the various candidates running for the Indonesian presidency. A study by the Indonesian environmental forum WALHI, conducted in March 2014, showed that just seven percent of the 6,561 candidates participating in the parliamentary elections featured environmental concerns in their election campaigns. This is even more surprising when we consider that the consequences of climate change are becoming increasingly obvious in Indonesia. While there were 475 natural disasters in the country in 2012, there were 1,392 in 2013. This is an increase of 293 percent in just one year. On top of this, the chances of those seven percent actually achieving victory in the election are not good, as most of them belong to small, insignificant parties.

Indonesian-language media very rarely address the topic of climate change, but certain projects and initiatives such as REDD and REDD+ have been granted a certain amount of media attention, as have the highly conspicuous effects of climate change such as severe flooding and mangrove death. The media in the capital city Jakarta is an exception to this general rule. The important English-language daily newspapers there address the topic of climate change often and in great detail. However, these newspapers are only read by the small, educated elite that have an adequate command of English.

ENERGY SECURITY AND CLIMATE CHANGE

Because energy security is usually regarded as more important than the environment, political debate often pushes climate change into the background. There is little appreciation for the crucial interconnectedness of the two topics. Indonesia continues to build new coal-fired power plants, turn natural woodland into managed forests and clear trees for mining. The deforestation of wide swathes of land remains Indonesia’s primary environmental problem. To this day Indonesia has been unable to halt this process, despite the fact that it is responsible for 59.4 percent of the country’s emissions. Peat bogs are of particular significance in this regard, as they store much more CO_2 than other types of biomass. The bogs are lost when the land is cleared, or when oil palm cultivation is expanded into peatland. Economic interests are clearly prioritised over environmental interests. The political debates on switching to more environmentally friendly methods of energy production are still dominated by economic motives, swamping what political will there is to establish a more sustainable energy policy. It is the efficiency of new technologies that counts, not their contribution to emissions reduction.

As a country blessed with a rich stock of natural resources, Indonesia considers itself barely affected by the global problem of dwindling raw materials. Only around half of the natural gas extracted in Indonesia each year is used domestically; the rest is exported. At the time of writing, Indonesia generates 87 percent of its energy from fossil fuels, and 9.9 percent from hydropower and geothermal plants. Just 3.1 percent is generated from other renewable sources. Indonesia is the world’s second-largest exporter of coal, and its large stocks of coal and natural gas mean that it prioritises these two fuel sources. Indonesia also possesses 40 percent of globally available geothermal energy. As already shown, this potential has not yet been fully exploited, since many decision makers are not yet aware of the need for more sustainable methods of energy production.

THE INTERNATIONAL PERSPECTIVE

The Indonesian government regards the European Union as a partner in the fight against climate change. It knows that the EU is the world's third-largest emitter of greenhouse gases and a proponent of ambitious climate policy action. In Indonesia's eyes, the EU's predominant role in this area is as a supporter of Indonesian efforts within the UNFCCC projects. The government expects technical and financial assistance from the developed nations of the EU. The two parties have signed numerous agreements in the past. One such example is the agreement on illegal logging ratified in October 2013.

However, few people in Indonesia know anything about Germany's energy transition – only a handful of specialists at best. The country therefore has little appreciation for Germany's pioneering role in this area. Despite the large and obvious risks, Indonesia is still planning to build two nuclear power plants on the island of Java. This move has been strongly criticised by activists, who point out the risks relating to Indonesia's geography and the threat of terrorism.

Indonesia is the world's fourth-largest emitter of greenhouse gases, and under President Susilo Bambang Yudhoyono it has become actively involved in multilateral climate policy. Yudhoyono made climate protection one of the key priorities of his administration. Under his leadership, Indonesia has hosted important international conferences such as the UN Climate Change Conference in Bali in 2007 and the first World Ocean Conference in Sulawesi in 2009. In April 2011 Jakarta hosted the fifth Business for Environment Summit, the leading international conference that brings business needs and environmental protection together. However, activists complain that these grand global gestures are not translated into adequate reforms at home. One gets the impression that Yudhoyono's primary concern has been to project a positive image of Indonesia abroad.

Indonesia's most important contribution to the UNFCCC has been its participation in the UN's REDD+ project. The UN is highly respected as a climate policy player in Indonesia, where government officials regard it as a key mover and shaker in the fight against climate change. Since 2007 Indonesia has thus demonstrated a high level of commitment to the REDD and REDD+ projects, which are the leading global mechanisms for reducing greenhouse gas emissions from deforestation.

REDD+

REDD+ (Reducing Emissions from Deforestation and Degradation) aims to make the conservation of forest carbon stocks more financially appealing. With the financial assistance of the Norwegian government, which has contributed US$1 billion, the programme is helping protect peatlands, particularly those of Central Kalimantan and Sumatra. REDD+ is also the most important instrument for reaching Yudhoyono's goal of achieving a 26 percent reduction in carbon emissions by 2020. But the project faces many imposing challenges. To date, only US$50 million of the promised US$1 billion have actually been handed out to projects in Central Kalimantan due to the feet-dragging of Indonesian officials. It has now become clear that the goal of 26 percent will not be met. The main reasons for this are legal: the responsibilities of the various authorities at the national, provincial, district and local levels are not clear and in some cases overlap or are contradictory. There have also been difficulties in implementing the moratorium on natural forest clearance and the uncooperative behaviour of many large firms. Precisely this kind of cooperation with the private sector on nature conservation issues was one of the major goals of the UN Climate Change Conference in Warsaw in autumn 2013 – which did result in two important global players, Nestlé and Asia Pulp & Paper, committing to zero tolerance for illegal timber. Other large firms in Indonesia are also now changing their business approaches out of fear of bad press on the international stage.

JAPAN

Paul Linnarz

Japan is the world's fourth-biggest island state, and with around 127 million inhabitants, the third-biggest industrialised nation. In 2010–11 its most important energy sources were nuclear power (approx. 30 percent), gas (approx. 30 percent), coal (approx. 23 percent), oil (approx. 5 percent) and hydropower (approx. 8 percent). Other renewable energies, such as solar power, wind power and biomass, played a very minor role. Since Japan has next to no natural resources for the production of energy, it has to import almost all of its fossil fuels.

Geothermal power plant in Iwate Prefecture.

In response to the nuclear disaster in Fukushima in March 2011, Japan has removed its 48 commercial nuclear power plants from the grid in order to overhaul them and to conduct safety tests. The resulting "energy gap" has been bridged only thanks to considerable reductions in electricity consumption and a dramatic increase in imports of oil, gas and coal. Their combined share of the energy mix in 2013–14 was 90 percent. In 2013 gas imports rose particularly sharply, by 17.5 percent. In summer last year, electricity consumption was almost ten percent (17 gigawatts) less than in 2010. The amount of energy saved is thus equivalent to the amount generated by 15 nuclear reactors.

ENERGY EMERGENCY IN THE WAKE OF FUKUSHIMA

The energy emergency is having a negative impact on Japan. First of all, it is inhibiting the economic reforms introduced by Prime Minister Shinzō Abe in late 2012. The reform policy, known as "Abenomics", depends on monetary easing and yen depreciation. This is benefiting Japanese exports as its makes Japanese goods more inexpensive abroad. On the other hand, the costs of imports are rising – including those for coal, gas and oil. As well as creating a record deficit in the trade balance, these developments were largely to blame for a current account deficit that lasted several months, up until February 2014.

On top of that, since Japan cannot generate its own nuclear energy and is therefore almost entirely dependent on fuel supplies from abroad, any direct or indirect conflicts with supplier states and any supply bottlenecks or sudden price hikes on the global market have an immediate effect on the country's energy security. Relevant in this regard are the territorial disputes in the East and South China Seas, and the contention over Chinese military ambitions in the region.

Since April 2014, the Japanese government has thus been preparing to reactivate some nuclear reactors as part of a new energy plan that foresees stricter safety controls. This will solve part of the problem but make others worse. One challenge facing Japan is that it does not have a permanent repository for nuclear waste. Already there are around 17,000 tonnes of spent fuel rods waiting for disposal in the reactors' spent fuel pools.

The government in Tokyo also intends to decentralise the country's energy supply and to separately organise electricity production and distribution by 2020 at the latest, reasoning that this should guarantee a stable electricity supply in the case of a renewed energy emergency.

As it had no nuclear power, Japan was forced to reboot its thermal power plants and to fire them with fossil fuels to a much greater degree than previously. This meant that an increase in carbon emissions from 300 million tonnes in the 2010–11 financial year to 400 million in 2012–13 was unavoidable. During the negotiations at the UN Climate Change Conference in Warsaw in November 2013, the Japanese government withdrew its goal, announced four years previously, of emitting 25 percent less greenhouse gases in 2020 than in 1990. This goal was now, it stated, "unrealistic".

Public debate on global climate change has been overtaken to some degree by that on the direct and indirect consequences of Fukushima on energy supply and Japan's economic development. Policy makers and the media are focusing on the conflicting issues of a high dependency on energy imports, the economic impact of rising fuel prices and the risks of recommissioning Japanese nuclear plants a good three years after the incident at Fukushima.

The Japanese are aware of European climate and energy policy, but they have become much less interested in the German energy transition since 2012. Europe in general is considered a possible example to follow, but only to a limited degree. One of the reasons for this is the difficult situation following the Fukushima disaster. Yet considerable investment would be required in order to trigger a real "energy transformation" in Japan, since the island nation's power system is not linked up to that of any neighbouring states and consists of two main power grids, one with a frequency of 50 hertz and another with 60 hertz.

With regard to public awareness in Japan of the UN's role in the debate on climate change, we need to distinguish between the scientific findings and recommendations of the IPCC and the standards laid down in the UNFCCC – as well as the discussions on actual emissions targets (i.e. the Kyoto Protocol).

The COP3, held in 1997, received particular attention from the Japanese media, primarily because it was held in Kyoto. This has ensured a high level of Japanese interest in the Kyoto Protocol. According to an analysis by the University of Minnesota, published in *Globality Studies Journal* in mid-2013, the subsequent UN Climate Change Conferences and policy making in general continued to make up the majority of Japanese reporting on climate issues and on the role of the United Nations in the following years. The figure in 2007 to 2008 was 70 percent of related content.

Yet there was considerably less reporting on the scientific findings of the IPCC, with one exception being when it was awarded the Nobel Prize for Peace in 2007. Perhaps that was one of the reasons why members of the IPCC were invited to Yokohama in March 2014 to put the final touches to their most recent report – not to mention the particularly difficult situation following Fukushima and the discussions on the future Japanese energy plan. In any case, this year the IPCC and its recommendations received considerable attention in the Japanese media.

According to the analysis in *Globality Studies Journal,* a little more than half of Japanese media reporting on climate change is dedicated to international climate issues. This puts Japan slightly above the global average of 50 percent. On the other hand, Japan appears to be much less interested in the economic and ecological impact of climate change or in civil society engagement in climate change advocacy than other Asian countries such as Taiwan, Korea and India. In 2007 to 2008 these topics made up less than 30 percent of Japanese reporting on climate change, compared to an average figure of almost 60 percent worldwide.

But that does not mean that climate change is irrelevant to the Japanese public – quite the contrary.

According to the Global Attitudes survey conducted by the Pew Research Center in Washington D.C. in mid-2013, 72 percent of Japanese people are worried about global climate change. Even more (74 percent) are worried about the growing influence of China, and yet more (78 percent) by North Korea's nuclear programme. Of all the Asian countries included in the survey, only South Korea (85 percent of respondents) was more worried about climate change than its neighbour Japan.

What is more, according to the Ministry of the Environment, almost 70 percent of Japanese people think that reducing energy consumption is more important now than before Fukushima. More than half of the population assign a greater value to renewable energies than previously. And a survey conducted by the daily newspaper Asahi Shimbun in March 2014 shows that almost 60 percent of the Japanese population are opposed to firing up the nuclear reactors.

Japanese industry considers that environmental and climate protection is a promising area for business development. While expectations for this segment were still very negative in late 2012 (-9 points), just one year later the sentiment index produced by the Ministry of the Environment reported a figure of +9 points. Companies operating in the environment segment gave an above-average assessment of the segment's prospects, awarding 9 points in 2012 and 17 points in 2013. They feel that business activity and investments in climate protection have more potential than other sectors within the environment segment, such as waste management, for instance. Sentiment improved from 18 points in 2012 to 27 points in 2013. A rating of 36 points is predicted for 2023.

One of the reasons for the positive expectations of the Japanese environment sector is the feed-in tariff introduced in summer 2012. This enabled Japan to expand its solar power capacity by almost a third last year alone, to over twelve gigawatts. The country is now one of the fastest-growing solar power markets in the world. Japan also intends to increase its use of offshore wind farms. By 2030, the share of renewable energies (including hydropower) in the energy mix is to grow to more than 20 percent.

KAZAKHSTAN

Barbara Janusz-Pawletta | Amos Reginald Helms

EFFECTS OF CLIMATE CHANGE AND THEIR PERCEPTION IN SOCIETY

The risks associated with serious climate change are already being felt in Kazakhstan. Periodic heatwaves have been placing a burden on Kazakhstan's transmission grids,[1] and increasing water deficits and adverse weather conditions are already impacting on the country's agriculture sector.[2] Also, climate change is harming human health[3] and natural ecosystems.

In the past few years, the majority of the Kazakh population (83 percent) have noticed changes to the climate. Though 43 percent are seriously worried about possible consequences, 40 percent do not assess the climate changes as severe.[4] The people in Kazakhstan say that the problems associated with climate change are primarily discussed in society (41 percent), the media (17 percent), social networks (11 percent) and in environmental NGOs (6 percent). Elected officials are seen as being the least worried about the topic (2 percent), despite the fact that 40 percent of survey respondents expect the government to direct more attention towards researching the problem and finding a solution to it. Around 53 percent of respondents think that the government's attention to the matter is little more than perfunctory; they sense a lack of actual concrete measures. At the same time, the active policies of European countries to stop climate change are judged positively by a third of respondents (34 percent) in Kazakhstan, and almost 50 percent of respondents gave a positive assessment of Germany's energy-saving policies, its use of alternative energy sources and its reduced use of nuclear power.

STRATEGIC INSERTION OF CLIMATE AND ENERGY PLANS IN STATE POLICY

Uncertainty about climate change scenarios for Kazakhstan is due to the uncertainty surrounding the changing scenarios of greenhouse gas concentrations. Kazakhstan has one of the world's highest emissions per capita. The potential of renewable energies has been largely untapped, primarily due to the boom in the energy and construction sectors.[5] However, the new political goal is for Kazakhstan to become a regional pioneer in green growth.

Projects focusing on renewable energies are one of Kazakhstan's three most promising ways to reduce its emissions.[6] There is enormous potential for developing wind and solar power, for instance, and for wasting much less energy. One pilot project is a wind park currently being constructed in Jereimentau, around 150 kilometres east of Astana. The facility is intended to provide electricity for Expo 2017 in Astana. In 2012, state-owned nuclear holding company Kazatomprom opened a factory producing solar cells and modules. Kazakhstan is also set to build its first nuclear power

1 | Cf. Marianne Fay, Rachel Block and Jane Ebinger, "Adapting to Climate Change in Eastern Europe and Central Asia", The World Bank, 1 June 2009, http://worldbank.org/eca/climate/ECA_CCA_Full_Report.pdf [31 July 2014].

2 | Cf. Republic of Kazakhstan, Ministry of Environment Protection, "Kazakhstan's Second National Communication to the Conference of the Parties of the United Nations Framework Convention on Climate Change", 2009, http://unfccc.int/resource/docs/natc/kaznc2e.pdf [31 July 2014].

3 | Ibid.

4 | Demoscope (The Bureau for Express Monitoring of Public Opinion), "83 % of people in Kazakhstan know about climate changes, while 43 % being seriously concerned about it", 31 March 2014, http://demos.kz/eng/index.php?article=25 [31 July 2014].

5 | Marton Kruppa, "Kazakhstan to launch carbon market next year", Thomas Reuters Point Carbon, 12 April 2012, http://pointcarbon.com/news/1.1825513 [31 July 2014].

6 | Climate Focus, "Option Review for Kazakhstan to Participate in the International Carbon Market", 6 January 2010, http://ebrd.com/downloads/sector/eecc/kaz.pdf [28 July 214].

Close to the Altai Mountains, Kazakh firefighters learn how to battle forest fires and wildfires, which are increasing along with the number and intensity of heatwaves.

plant in the city of Aktau. This is part of a policy to promote clean energy – which, in Kazakhstan, includes nuclear power.[7] Kazakhstan dominates the global market for uranium, as it is home to a good third of the world's supply.[8] In compliance with the 2006 Central Asian Nuclear-Weapon-Free Zone (CANWFZ) treaty, Kazakhstan does not allow other countries to store nuclear waste on its territory. It has recommended setting up a nuclear fuel bank for the peaceful use of nuclear power in Kazakhstan, monitored by the International Atomic Energy Agency.

Kazakhstan has a series of important political documents outlining strategies for national climate protection and adaptation measures. The Kazakhstan 2050 Strategy, launched in 2012, focuses on the energy sector and on the recognition of alternative and renewable energy sources, particularly solar and wind power. In May 2013, the Kazakh government developed a concept for the country's transition to a green economy in response to the Rio+20 Conference held the previous year.[9] The Kazakh president's Green Bridge programme has been an important mechanism for greening the economy. This was triggered by the Rio+20 Conference[10] and could serve as a model for the development of sustainable energy approaches in the region. An important component of the Green Bridge initiative is the upcoming Expo 2017 – the world fair that will take place in Kazakhstan for the first time, in the capital Astana. There is a draft national concept for adapting to climate change.

However, there is no effective cross-sector institutional apparatus offering general policy guidelines for tackling climate change in Kazakhstan that can take decisions on priorities, resource allocation and result monitoring, and ensure that adaptation and climate protection policies and programmes are implemented. The Ministry of the Environment and Water Resources is the central organ for the coordination and implementation of government policy, including on issues relating to climate change. Individual units – the "republican state-owned companies" JSC Zhasyl Damu and Kazhydromet – are responsible for preparing the annual reports on greenhouse gas emissions, the impact on resources and the climate, assessments and research into reductions. Improved coordination between the responsible authorities would help Kazakh policy makers explicitly address climate change and the adaptations needed to fight it.

NEW PERSPECTIVES IN ENVIRONMENT AND ENERGY RELATIONS BETWEEN EUROPE AND KAZAKHSTAN

Cooperation on energy issues remains a priority in relations between Kazakhstan and the European Union. Some 80 percent of energy generated in Kazakhstan is delivered to Europe, which makes Kazakhstan the sixth-largest energy supplier to the EU. In 2012, the German and Kazakh governments signed a cooperation agreement on raw materials, industry and technology based on the principle of "resources in xchange for technology". To date, German companies have very little involvement in the extraction of raw materials, instead they support Kazakh firms by providing 50 percent of the technology.

Trade in raw materials has become the main element in economic relations between Kazakhstan and Europe. This collaboration is now to be extended into the field of renewable energies. Kazakhstan is particularly interested in obtaining German expertise on suitable legal, administrative and economic frameworks and German environmental technology. On 8 February 2012, the two countries signed a joint declaration on intensifying collaboration in the areas of energy efficiency and renewable energies. On the basis of this declaration, the German environment ministry is helping the Kazakh environment ministry establish a national emissions trading system. It is also providing

7 | "Kazakhstan seeks Russia's help to build nuclear power plant", Kazinform, 05 February 2014, http://inform.kz/eng/article/2628074 [31 July 2014].

8 | "Kasachstans Uranproduktion 2011 um neun Prozent gewachsen – Kazatomprom" (Kazakhstan's uranium production up 9 percent in 2011 – Kazatomprom), Ria Novosti, 3 February 2012, http://de.ria.ru/business/20120203/262608952.html [31 July 2014].

9 | Republic of Kazakhstan, "Concept for Transition of the Republic of Kazakhstan to Green Economy", 30 May 2013, http://eco.gov.kz/files/Concept_En.pdf [31 July 2014].

10 | Republic of Kazakhstan, Ministry of Environment Protection, "Adaptation to Climate Change. Kazakhstan's Green Growth Strategy – Astana 'Green Bridge' Initiative", http://adbi.org/files/2011.12.14.cpp.day2.sess2.16.country.presentation.kazakhstan.pdf [31 July 2014].

additional advice on renewable energies and on incentives for promoting investment in energy efficiency.

CENTRAL ASIA'S GREAT GREEN HOPE FOR MULTILATERAL CLIMATE POLICY IS STARTING TO CRUMBLE

In 2010, Kazakhstan voluntarily committed to reducing its greenhouse gas emissions to 15 percent less than its 1992 levels by 2020. It signed the relevant legal documents, such as the UNFCCC of 1992, and ratified the Kyoto Protocol. Yet Kazakhstan is still one of the world's biggest carbon emitters among countries with such economic clout. In Germanwatch's latest Climate Change Performance Index, Kazakhstan was one of the worst-performing countries.[11]

The first nationwide emissions trading system in Asia was set to be introduced in Kazakhstan in early January 2014 as one of the most important instruments for pursuing its strategy of green growth and a low-carbon economy. The system includes companies in the energy, mining, chemicals and transportation sectors, which are responsible for 80 percent of the country's entire carbon emissions. The Kazakh model is being developed on the basis of the European emissions trading system, which might make it possible to combine the two systems as some stage.[12] However, in response to opposition by major Kazakh companies, the pilot trading scheme is now set to run until 2015[13], with affected companies only being obliged to document their emissions and with no fines being imposed for overstepping the limits defined in the carbon certificates.

11 | Germanwatch, "Climate Change Performance Index: Emissions are rising – but there is a glimmer of hope", press release, 18 November 2013, https://germanwatch.org/en/7704 [31 July 2014].

12 | Vadim Ni, Jelmer Hoogzaad and Darragh Conway, "New Market Mechanism: Will Kazakhstan be the next country to establish a carbon emissions trading shame?", *Carbon Trading Magazine*, Vol. 1, No. 8., 10/2012.

13 | Komila Nabiyeva, "Kasachstan stoppt Emissionshandel" (Kazakhstan stops emission trading), *Klimaretter*, 16 January 2014, http://klimaretter.info/politik/hintergrund/15479-kasachstan-stoppt-seinen-emissionshandel [31 July 2014].

CAMBODIA

Denis Schrey

CAMBODIA AND CLIMATE CHANGE – ACUTE THREATS DOMINATE PUBLIC PERCEPTION

As a developing country whose economy is largely dependent on rice farming and fishing, Cambodia is regarded as particularly at risk from climate change[1] in the latest UN climate report.[2] The lives of the rural population in the regions around the Mekong and the Tonlé Sap are threatened by regular, worsening flooding. Between 1996 and 2001, drought and floods led to a 90 percent reduction in Cambodia's rice harvest. Its fishing industry has also been affected particularly badly by changes in the weather.

In the future, Cambodia can expect even more extreme temperatures in the summer, even less rain in the dry season and even more precipitation during the monsoon period. That means that Cambodia is likely to suffer from droughts and floods even more frequently in the future than it already does. The consequences will be water and food shortages, rising food prices, malnutrition and increased rural exodus. The floods will also bring more cases of illnesses such as malaria and dengue fever.[3]

Given such horror scenarios, Cambodia counts as one of the ten countries likely to be worst affected by climate change.[4]

1 | IPCC, *Climate Change 2014: Impacts, Adaptation and Vulnerability. IPCC Working Group II Contribution to AR5*, 2014, http://ipcc.ch/report/ar5/wg2 [28 July 2014].

2 | Cf. Simon Henderson, "Cambodia At High Risk From Climate Change, UN Report Says", *The Cambodia Daily*, 1 April 2014, http://cambodiadaily.com/archives/c-55383 [31 July 2014].

3 | Emily Wight, "Droughts, flooding, disease: the reality of a Cambodia that has been hit by climate change", *The Phnom Penh Post*, 11 April 2014, http://phnompenhpost.com/7days/droughts-flooding-disease-reality-cambodia-has-been-hit-climate-change [31 July 2014].

4 | Khy Sovuthy and Dene-Hern Chen, "Cambodia Should Prepare for Climate Change", *The Cambodia Daily*,

The Kamchay hydropower dam in Kampot Province – 3.68 percent of Cambodian domestic electricity production comes from hydropower.

The people of Cambodia are already experiencing changes in their daily lives as a result of climate change, and they are worried about the even bigger negative effects to come. Despite this, the question of how Cambodia can get actively involved in attempts to reverse the phenomenon has taken a back seat, and the national English-language press reflect this reticence. Yet the government is making serious efforts to develop programmes and measures to help the country adapt to the consequences of climate change – especially as part of its energy efficiency policy – in a bid to prevent, for instance, any further increase in carbon emissions.

CAMBODIA'S ENERGY SECTOR – STARTING OFF ON A BAD FOOTING

Currently, most energy in Cambodia is generated from fossil fuels, so its energy sector is carbon-intensive. The country also has tremendous problems with regard to energy security: a low electrification rate, inadequate domestic electricity production and the resulting dependency on energy imports from neighbouring countries. Electricity prices in Cambodia are among the highest worldwide,[5] and the competitiveness of Cambodian industry is suffering from the high energy costs.

In 2010, only 31 percent of the population had access to electricity.[6] It should be noted, however, that there are major differences between the situation in the cities, especially Phnom Penh (where 98.9 percent of households were connected to the grid in 2011), and the countryside (where only 23.5 percent of households had access to the public electricity supply in 2013).[7] To date, there is no comprehensive national power grid. Access to energy is crucial for the country's continuing economic development and the fight against poverty. The government is not afraid of formulating ambitious goals in this area, but whether or not these can be achieved will depend on how much the state, private investors and donors are willing to invest in the coming years. For instance, by 2020 the government wants every village in Cambodia to have access to electricity, with 70 percent of households being connected to the grid by 2030. The remaining 30 percent are to be supplied with primarily locally generated solar power as part of the Renewable Energy Development Programme.

However, the electricity presently being generated in the country is far from satisfying the electricity needs of even just that part of the population who already have access to the grid. That makes Cambodia particularly dependent on energy imports (oil and gas as well as electricity) from neighbouring countries. According to the 2013 energy report of the Electricity Authority of Cambodia,[8] in 2012 a total of 104.32 million kilowatt-hours were imported – an increase of 15 percent over the previous year. However, the share of imported electricity in the total electricity available in Cambodia did sink from 64.24 to 59.67 percent over the same period. Yet, when held up to the light, Cambodia's energy dependency is revealed to be even greater: the country's own electricity is predominantly generated by imported heavy fuel oil (as much as 93 percent in 2011), while Cambodia's hydropower plants contributed just three percent of total domestic production, and the use of biomass only around one percent.[9]

6 November 2013, http://cambodiadaily.com/archives/c-46695 [31 July 2014].

5 | Heng Pheakdey, "Cambodia's Energy Security Is at Risk", *The Cambodia Daily*, 7 November 2012, http://cambodiadaily.com/opinion/c-5309 [31 July 2014].

6 | fact fish, "Cambodia: Access to electricity (% of population)", http://factfish.com/statistic-country/cambodia/access+to+electricity [31 July 2014].

7 | Energypedia, "Cambodia Energy Situation", 9 July 2014, https://energypedia.info/wiki/Cambodia_Energy_Situation [31 July 2014].

8 | Electricity Authority of Cambodia, "Report on Power Sector of the Kingdom of Cambodia", 2013, http://eac.gov.kh/wp-content/uploads/2014/07/report-2012en.pdf [31 July 2014].

9 | Current total primary energy consumption presents a slightly different picture: In 2009, Cambodia's primary energy consumption was 5.2 million tonnes of oil equivalent. To date, the large majority (71.7 percent) comes from biomass, especially wood and coal, and 28.2 percent from imported oil, while only a negligible amount is produced by hydropower. Kingdom of Cambodia, Ministry of Industry, Mines and Energy, "National Policy, Strategy and Action Plan on Energy Efficiency in Cambodia", 16 May 2013, p. 2, http://euei-pdf.org/sites/default/files/files/field_pblctn_file/EUEI%20PDF_Cambodia_Energy%20Efficiency_May2013_EN.pdf [31 July 2014].

As the power grid expands, therefore, there is a risk that electricity prices and dependence on energy imports will continue to rise – unless the rapid increase in electricity consumption[10] is at least slowed and domestic production greatly extended. Grid expansion will bring about a change in the energy mix, so that in the long-term, coal-fired power stations and hydropower plants will generate most of the country's electricity.[11]

SOLUTIONS AT THE NATIONAL LEVEL

The Cambodian government is primarily looking to extend the country's coal and hydropower capabilities in its bid to increase electricity production. The focus in rural areas without access to the public grid will be on solar power, solar lamps and the efficient use of biomass.

In late 2011, the country's largest hydropower plant Kamchay opened in Kampot Province. It has a total output of 193.2 megawatts. Over the coming years (the prime minister says by 2015) another four hydropower plants in Koh Kong Province are set to follow (Kirirom III, Lower Russei Chum, Stung Tatay and Stung Atay).[12]

Coal-fired power plants will also be built to make up for the reduced hydropower capabilities in the dry season. In February this year, the first coal plant opened in Sihanoukville, with an annual capability of 100 megawatts.[13] Two more are to follow by 2016.[14]

Since Cambodia does not possess the required financial and technical means to build such large-scale power plants, it is receiving assistance from abroad – for instance from China, Malaysia and Vietnam. The foreign companies have been awarded a concession contract to operate the plants, initially over a period of up to 30 years.

Cambodia has the right climatic conditions to make good use of solar power. Solar energy is particularly useful in rural areas that are not connected to the grid. In 2012, in the biggest project of its kind to date, a Laotian firm equipped around 12,000 households with solar modules. The project is supported by the World Bank and gives the recipients the chance to pay off the modules over a period of four years while providing them with relatively cheap electricity.

Energy supply is also to be improved as a result of heightened energy efficiency. In 2013, the Cambodian government developed a National Policy, Strategy and Action Plan on Energy Efficiency with the support of the EUEI PDF (EU Energy Initiative Partnership Dialogue Facility). This is intended to curb growth in nationwide energy consumption, reducing it by up to 20 percent by 2035.[15] At the same time, carbon emissions are to be reduced by three million tonnes (23 percent) by 2035. In order to achieve these ambitious goals, energy use in buildings, industry and private homes is to be made much more efficient, while the production and use of energy in rural areas is to be managed more effectively. There are efforts to reduce the use of wood and coal in the countryside, particularly in food preparation, and instead to introduce more efficient cooking devices and alternative fuels such as char-briquettes (made from clothing industry waste) into rural kitchens. This measure should help protect against deforestation. It also reduces carbon emissions and protects the rural population from the unhealthy fumes emitted from burning wood and coal.

The urgently needed measures for adapting to the consequences of climate change remain unaffected by these efforts. A crucial role falls to the Cambodia Climate Change Strategic Plan 2014–23 (CCCSP),[16] which was published last year by the National Climate Change Committee (NCCC), chaired by Prime Minister Hun Sen. The plan contains strategies that Cambodia hopes to adopt to meet the challenges posed by climate change. The CCCSP places a clear emphasis on measures that should help the country adapt to the consequences of climate change. The CCCSP formulates the following strategic goals for the period in which it applies:

10 | Electricity consumption in Cambodia more than quadrupled in the space of nine years (from 2002 to 2011). Ibid., p. 1.
11 | Ibid., p. 2.
12 | Don Weinland and Phak Seangly, "PM opens Kampot hydrodam", *The Phnom Penh Post*, 8 December 2011, http://phnompenhpost.com/business/pm-opens-kampot-hydrodam [31 July 2014].
13 | Khy Sovuthy, "Hun Sen Inaugurates New Coal Plant, Unveils Energy Plans", *The Cambodian Daily*, 26 February 2014, http://cambodiadaily.com/business/h-53267 [31 July 2014].
14 | Weinland and Seangly, n. 12.
15 | N. 9, p. 6.

STRATEGIC GOALS OF THE CAMBODIA CLIMATE CHANGE STRATEGIC PLAN 2014 – 23

- To improve the quality of life of the population with regard to access to nutrition, drinking water and energy, thus enhancing their general health
- To reduce health risks linked to climate change, with consideration being paid to groups at particular risk due to their sector, region or gender
- To protect ecosystems at risk (such as Tonlé Sap and the Mekong) and particularly valuable historic and cultural sites
- To promote carbon-neutral technologies
- To educate the population on issues relating to climate change
- To set up social security systems to mitigate or compensate for damage
- To improve collaboration between actors and institutions at the national and international levels

The CCCSP is currently still in the financing phase; it is yet to be seen how effective the action plans and measures it is to develop will be.

CAMBODIA'S ROLE IN MULTILATERAL CLIMATE POLICY

As a developing nation in the Group of 77 plus China, according to the UNFCCC, Cambodia is exempt from committing to the reductions as laid down in the Kyoto Protocol and, in future, the Doha Amendment.[17] This group continues to adopt the stance that developing countries must be spared these kinds of commitments, and Cambodia does not seem to be making any move towards abandoning this joint position.

Quite the contrary: late last year[18] Cambodia's Environment Minister Say Samal stressed Cambodia's full association with G77 / China and that developed countries need to take the lead in greenhouse gas mitigation, while developing countries like Cambodia can voluntarily participate, based on financial and technological support. Furthermore, Samal urged developed countries to greatly increase their financial support to countries vulnerable to climate change.

PUBLIC OPINION IN CAMBODIA

Neither the Cambodian press nor the Cambodian public seem to be entering into any in-depth discussion on the national action plans or on national energy and climate policies in general. However, individual projects do attract the critical gaze of the press and of certain population groups. For instance, Cambodian NGOs have complained that the country's biggest hydropower plant, Kamchay, was erected without a thorough impact assessment being performed. This puts ecosystems in the region at risk. Local residents have expressed similar disquiet.[19] The recently opened coal-fired power plant in Sihanoukville is also generating health concerns, with fisherfolk fearing for their livelihoods and NGOs expressing worries over the impact on coastal waters and natural habitats.[20]

Insofar as there is any debate in Cambodia about international climate policy, this is conducted primarily by NGOs. On the occasion of the UN Climate Change Conference in Doha, for instance, NGOs called for industrialised nations to shoulder more of the burden of climate change. They also stressed that Cambodia needs assistance in order to better profit from the opportunities presented by the carbon trading system.

16 | Kingdom of Cambodia, "Cambodia Climate Change Strategic Plan 2014 – 2023", 2013, http://bit.ly/1k99177 [31 July 2014].
17 | Cambodia is currently in the process of ratifying the Doha Amendment.
18 | Kingdom of Cambodia, Ministry of Environment, Climate Change Department, "Press Release COP 19 dissemination workshop, 20th Dec 2013", http://bit.ly/1n6JHJH [31 July 2014].
19 | Vong Sokheng and Sebastian Strangio, "High hopes for hydropower", *The Phnom Penh Post*, 29 May 2008, http://phnompenhpost.com/special-reports/high-hopes-hydropower [31 July 2014].
20 | Hor Kimsay and Eddie Morton, "Mixed reaction to coal-fired plant", *The Phnom Penh Post*, 26 February 2014, http://phnompenhpost.com/business/mixed-reaction-coal-fired-plant [31 July 2014].

OUTLOOK

Cambodia is caught in the wheels of a dilemma. On the one hand, it has to bear the growing costs of adapting its entire society to climate change, already a pressing need due to extreme weather conditions and their impact on agriculture. On the other hand, it has to ensure the competitiveness of its own industry by achieving more energy security and affordable energy prices. Over the coming decades, both these tasks will require investments that go far beyond the existing financial capabilities of a developing country.

As the cost of adapting to climate change rises, Cambodia will have to invest heavily in expanding its energy infrastructure, in improving its energy efficiency and in finding an energy mix that provides investors and consumers with a stable, affordable energy supply. The international community will surely offer Cambodia technical and financial support so that it can tackle these challenges, but foreign aid can only supplement the urgently needed private investments in energy infrastructure and the necessary transfer of knowledge and technology. A transparent regulatory framework for investment decisions will be the basic prerequisite for the long-term development of this sector.

MALAYSIA

Jan Senkyr

In recent years, public awareness of the importance of climate change has risen continuously in Malaysia, and it has now become an important factor in government planning and decision-making. Malaysia aims to achieve the rank of a fully developed high-income country by 2020; living conditions and environmental factors are hence being ascribed an increasingly important role. This is reflected in the media and public debate.

The Malaysian government has initiated a series of ambitious, comprehensive projects intended to bring about structural improvements in the economy, the energy system and the environment, with a focus on promoting renewable energies, increasing energy efficiency and developing green technologies.

Many of the current projects are based on decisions that were already incorporated in the Eighth and Ninth Malaysia Plans (2001–06 and 2006–11). The National Policy on Climate Change, formulated in 2009, is of particular significance in this regard. That same year, the government adopted a Green Technology Strategy to serve as a framework for the fulfilment of climate policy goals. In December 2009, Prime Minister Najib Razak announced at the UN Climate Change Conference that by 2020 Malaysia would reduce its emissions by 40 percent of 2005 levels. This is an ambitious commitment given prevailing conditions.

Malaysia is one of the countries with the highest level of emissions in relation to its economic size. This is due to an unfavourable energy mix, as far as climate policy is concerned, and to the country's economic structure. The country has rich reserves of oil and gas, and they still make up 40 percent of national income. Over 90 percent of Malaysia's primary energy is derived from fossil fuels (oil, gas, coal). Gas and coal have a particularly large share of electricity production, with 62 percent and 29.6 percent respectively. To date, renewable sources have accounted for less than one percent of power generation.

Now, the current Tenth Malaysia Plan (2010–15) includes the promotion of renewable energies and the development of green technologies as key areas for innovation.

Renewables' share of the Malaysian energy mix is to increase to six percent by 2015 and to 17 percent by 2025. On the one hand, this measure is intended to support achievement of climate policy goals; on the other, it aims to reduce the country's dependency on its dwindling oil and gas reserves. Yet recent advances

in extraction technology – particularly for exploiting shale gas and oil sands and for deep sea drilling – are creating new incentives for investments in the traditional oil and gas industries. At the forefront in this regard is the national oil and gas company Petronas.

The feed-in tariff introduced in December 2011 provided an important impetus for the promotion of renewable energies for electricity production. These tariff regulations are based on the German model and guarantee fixed tariffs for electricity that is generated from solar energy, biomass, biogas and small hydropower plants. Applications for projects in this area are being accepted until the end of 2014, and the total capacity of the projects involved should reach three gigawatts by 2020.

The Malaysian government regards solar energy in particular as promising for promoting technological development and economic growth. After China and Germany, Malaysia is one of the leading producers of photovoltaic cells. Thanks to Malaysia's sunny weather conditions, there is great potential for development in this area.

Another promising source of renewable energy is the country's large quantities of biomass. Malaysia is the world's second-biggest producer of palm oil, after Indonesia, and its large plantations produce vast amounts of organic waste. The timber industry, rice fields and rubber plantations could also supply significant quantities of biomass. To date, however, the potential of energy generation from biomass has been largely untapped, since there is little domestic demand and a lack of the necessary legal and financial impetus. On the flip side, however, generating more energy from biomass would involve large plantations competing for rainforest land. Deforestation, particularly the illegal logging carried out during the dry season and the smog this creates, has become an important political issue in Malaysia.

The promotion of renewable energies is to be linked to efforts to improve energy efficiency. The specific goals in this regard are laid down in the New Energy Policy that is part of the Tenth Malaysia Plan. Projects to improve energy efficiency in industry, transportation, construction and the technology sector are to be supported within an integrated approach.

Malaysia does not reject nuclear power; this option is explicitly kept open in the Tenth Malaysia Plan. However, the construction plans for two reactors have not yet advanced far.

Of course there are considerable shortcomings in the practical implementation of environmental and energy policy goals. In particular, there is a lack of efficient governance, institutional competence and environmental awareness, but progress is also impeded by political and economic conflicts of interest, nepotism and corruption.

The Malaysian public are aware of climate change and the importance of sustainable environmental and energy policies, but not to the degree that people in Germany and Europe are. The German energy transition is therefore primarily being eyed by experts and the relevant government bodies, who are examining it as a possible model for Malaysia to follow. But Malaysia is predominantly interested in investments and technology transfer in its relations with Germany. Many German companies have already recognised this and have an active presence in Malaysia. But Germany and the EU could also provide valuable assistance in education and training and in capacity building, as well as by offering consultancy services and by engaging in expert discussions and exchange. This is something that the Malaysian government has already emphasised.

Malaysia is heavily involved in multilateral climate policy. It ratified the Kyoto Protocol in 2002 and has been a leading CDM host country ever since. It also made its own reduction commitments at the 2009 UN Climate Change Conference in Copenhagen, stating that its emissions in 2020 would be 40 percent lower than its 2005 levels. And although there are great differences of opinion between the members of ASEAN, Malaysia uses its position within that organisation to promote the formulation of a joint policy on climate change. Most significant, however, is the lack of appropriate legal and institutional framework conditions in Malaysia.

THE PHILIPPINES

Peter Köppinger

In November 2013, Typhoon Yolanda, known internationally as Typhoon Haiyan, swept across the island state of the Philippines at speeds of more than 300 km / h, leaving a trail of destruction. Haiyan was the strongest storm at landfall ever recorded. According to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the storm claimed the lives of around 6,000 people and left 4.1 million homeless.[1] Around 2,000 others are still officially missing. Reinsurance company Munich RE assesses the damage at US$10 billion – five percent of the country's gross domestic product.[2] Experts disagree over the degree to which climate change is responsible for Haiyan, but the fact that the Philippines are extremely vulnerable to extreme weather is undisputed. Germanwatch's Long-Term Climate Watch Index ranks the Philippines seventh in its list of the countries most affected by extreme weather events from 1993 to 2012. In 2012 alone, the Philippines ranked second – after Haiti,[3] which suffered dramatically from Typhoon Bopha.

A study published by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) in 2011 addressed the impact of climate change on the Philippines. It confirmed the generally held belief that greenhouse gas emissions caused by human activity contribute to climate change and established that average temperatures had already risen considerably and that typhoon intensity had increased. For the future, PAGASA expects more days with extreme heat during the dry season and more days with extreme precipitation during the monsoon season – leading to worse droughts and flooding.[4]

This kind of extreme weather would have fatal consequences for the economy of this developing country, especially considering that is still characterized by a large agriculture sector. The country is also not in a good position to stem the costs of adapting to such an extreme climate. It is already experiencing difficulties in responding adequately to natural disasters and setting up measures to mitigate their impact.

Yet knowledge about climate change is still extremely limited among the people of the Philippines. In a survey by Filipino public opinion polling body Social Weather Stations, more than half of respondents had very little or no knowledge about climate change, although 85 percent had already felt its impact.[5]

Despite this, climate change is considered one of the most important driving forces behind the country's national energy policy, alongside energy security, integration in the global energy markets and providing energy at prices people can afford.[6] Currently, fossil fuels like oil, coal and natural gas are the major source of energy in the Philippines. In 2010, they supplied around 60 percent of the country's energy – although 70 percent of them were imported, primarily from the Middle East.[7] But almost all of the remaining energy (around 40 percent) came from renewable sources and did not have to be imported. This puts the Philippines at the forefront in international comparison, as the country's Department of Energy reports. The European Union, for instance, only obtains 10 percent of its energy from renewable sources.[8] The geography of the Philippines puts it in an excellent position to exploit alternative sources of energy. Its geothermal capacity is remarkable, thanks to its location on the Pacific's Ring of Fire. Geothermal energy covered 21 percent of the country's energy needs in 2010.[9] Hydropower also plays an important role, providing 21 percent of the country's generation

1 | Cf. UN-OCHA, "Philippines: Typhoon Haiyan", Report No. 29, 3 January 2014, http://reliefweb.int/sites/reliefweb.int/files/resources/OCHAPhilippinesTyphoonHaiyanNo29_02January2014.pdf [31 July 2014].

2 | Munich RE, "Overall picture of natural catastrophes in 2013 dominated by weather extremes in Europe and Supertyphoon Haiyan", press release, 7 January 2014, http://bit.ly/1g2IUq6 [31 July 2014].

3 | Sönke Kreft and David Eckstein, *Global Climate Risk Index 2014. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2012 and 1993 to 2012*, Germanwatch, 11 / 2013, http://germanwatch.org/en/download/8551.pdf [28 July 2014].

4 | Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), "Climate Change and the Philippines", 02 / 2011, http://dilg.gov.ph/PDF_File/reports_resources/DILG-Resources-20121302ef223f591.pdf [31 July 2014].

5 | Social Weather Stations, "First Quarter 2013 Social Weather Survey: 85 % of Filipino adults personally experienced the impacts of climate change", 25 June 2013, http://www.sws.org.ph/pr20130625.htm [28 July 2014].

6 | A. La Viña, J. Dulce, N. Saño, "National and Global Energy Governance: Issues, Linkages and Challenges in the Philippines", *Global Policy. Global Energy Governance*, Vol. 2, pp. 80–93, 11 / 2011.

7 | Republic of the Philippines, Department of Energy, "National Renewable Energy Program", 2012, https://www.doe.gov.ph/microsites/nrep [31 July 2014].

8 | Ibid.

9 | Ibid.

These wind turbines on the beach in Bangui, in the north of the island Luzon, were part of southeast Asia's first wind farm when they were inaugurated in 2005.

capacity.[10] There is, however, very little use of biomass, solar energy or wind power.

As it is not a party to Annex I of the UNFCCC, the Philippines has no obligation to reduce its greenhouse gas emissions. The island state accounted for just 0.31 percent of global emissions in 2013.[11] Despite this, its government committed to tackling climate change in its 2009 Climate Change Act, and the National Climate Change Action Plan of 2011 declares a sustainable energy supply one of the cornerstones of its climate policy.

Filipino energy prices are among the highest in southeast Asia and nowhere in Asia are they higher than in the capital city Manila.[12] GIZ estimates that fossil fuels are more expensive for the Philippines than renewable energies, if one takes into account their external costs such as those related to health and environmental impacts. Each year, the Filipino economy loses US$1.5 billion as a result of air pollution, while US$400 million is spent on treating its negative health effects. GIZ believes that there are other strong arguments in favour of fostering renewable energies in the Philippines. These include their lower marginal costs, which would reduce the price of electricity, and their potential as a driver for employment and investment.

Motivated by the shift in climate policy, its dependency on imports from the Middle East and uncertainty on the global energy market, the Filipino government has initiated a series of reforms and action plans to make the energy supply of the future more sustainable and kinder to the environment. In 2008 it passed the Renewable Energy Act to promote and expedite the development and utilisation of renewable energies. Three years later there followed the National Renewable Energy Plan, one of the world's most ambitious restructuring plans for a national energy supply. The plan foresees a gradual increase in the proportion of renewable energies in the energy mix, with more than double the 2010 share by 2020, and treble by 2030.

Yet, the Philippines is experiencing typical, country-specific obstacles to implementation of these goals. The island state is well known for its excessive bureaucracy and rampant corruption. For instance, the director of the Department of Energy, Mario Marasigan, says that as many as 132 signatures are needed for a contract on setting up a renewable energies production facility.[13] It is also unclear which authorities are responsible for what, making it difficult to act efficiently and thus to attract investors. In order to solve these problems, the Philippines is looking to German expertise and is working closely with GIZ. Taking the German Renewable Energy Act as a model, the Philippines hopes to introduce an electricity feed-in tariff and ensure improved efficiency and lower costs for consumers.

As far as international climate policy is concerned, the United Nations plays a central role for the Philippines. It is one of the most important organisations promoting climate research and reform efforts in the country. For instance, when developing its climate scenarios for the Philippines – an endeavour financed by the UN – PAGASA used methods that were also employed in the UN's IPCC climate research.[14] The UN is also the Philippines' most effective mouthpiece in international debates on climate change. Following Typhoon Haiyan, all eyes were on the Filipino delegation at the UN Climate Change Conference in Warsaw, which took place just a week after the disaster. At the event, the Philippines' lead climate negotiator, *Naderev* "Yeb" Saño, grabbed global headlines when he delivered an emotional speech appealing to the

10 | Ibid.
11 | Senate of the Philippines, "GHG Emissions At A Glance", 03/2013, http://senate.gov.ph/publications/AAG%20 2013-03%20GHG%20emission.pdf [31 July 2014].
12 | GIZ, "Renewable energy in the Philippines: Costly or competitive?", GIZ Desk Study, 2013, http://academia.edu/4859391/Renewable_energy_in_the_Philippines_Costly_or_competitive [31 July 2014].
13 | C-CRED, "Intensifying the Renewables. Philippine – German Policy Dialogue on Renewable Energy", 21 February 2012, http://c-cred.org/recentnews.html [31 July 2014].
14 | N. 4.

global community to act quickly, and announced his decision to go on a fast out of solidarity with the victims of the typhoon. But the muted success of the summit in Warsaw demonstrates the ultimately insignificant role of this developing country within international climate policy. Yet some negotiators – including the UN[15] and the EU[16] – see the Philippines as a potential trailblazer for global climate policy and are calling upon the country to take on a leadership role.

So, although the people of the Philippines are in need of education about climate change, this island nation is poised on the cusp of a future with green energy. The country is already a regional leader, and the government's reform efforts are promising. The potential for renewable energy is tremendous – but so is the need. Ever more catastrophic natural disasters are costing the country billions every year, while its rapidly growing economy is demanding more and more energy. Ultimately, it is the poor people who suffer most from the highest energy prices in Asia. Renewable energies could be the solution to this problem. The first steps have been taken; we can only hope that these efforts do not get bogged down in a mire of corruption and bureaucracy.

15 | "Philippine role in climate change control stressed", *Business World Online*, http://bit.ly/1pto0Ib [31 July 2014].

16 | Cris Larano, "Philippines Urged to Take Leadership Role on Climate Change", *Wall Street Journal Southeast Asia*, 08 September 2013, http://blogs.wsj.com/searealtime/2013/09/08/philippines-urged-to-take-leadership-role-on-climate-change [31 July 2014].

MONGOLIA

Johannes D. Rey

ALL QUIET ON THE MONGOLIAN FRONT

A general problem affecting every field of Mongolian politics concerns getting hold of the precise facts and figures necessary to develop sustainable solutions. Despite this shortcoming, politicians and the public are becoming increasingly aware of environmental issues. This is because, in the capital Ulan Bator in particular, problems such as widespread air pollution and increasing water scarcity are having a direct impact on people. The whole world is talking about air pollution in Beijing and New Delhi. But with an average annual particulate matter concentration of 279 micrograms per cubic metre (safe limit: 20), the pollution in Ulan Bator is, according to the WHO, more than double that of Beijing (121) and enough to earn it second place after Ahwaz in Iran (379) in the list of cities with the most polluted air. Another, equally serious problem is that the city's only source of drinking water, the Tuul, is heavily polluted; WHO figures show that it is the fifth dirtiest river in the world.

STARTING POINT

Mongolia is sparsely populated, the world's largest landlocked country and home to extreme climatic and geographical conditions. As such, it is extremely vulnerable to climate change and is facing the particular challenge of working out how to protect its limited natural resources, fragile ecosystems and unique biodiversity. Increasing economic dynamism is causing water consumption and land use to increase unchecked. Rapid urbanisation and migration to urban centres, combined with a booming mining sector, are leading to a rise in energy demand that to this day is still met almost exclusively with coal. Mongolia has neither a rigorous government strategy nor any incentive mechanisms for energy efficiency and energy savings. The population is almost entirely uninformed about the ways they can save energy and become more energy efficient. According to statements by a high-level civil servant in the environment ministry, climate and human influences and their impact on Mongolia are mainly visible in the following areas:

Smog over Ulan Bator.

- The progressive melting of the permafrost and mountain glaciers
- The increasing frequency of dzuds (freezing winters with heavy snow that cause millions of animals to freeze or starve to death)
- The decline in surface water and the falling water table
- The disappearance of natural pastures, forests and wetlands as a result of desertification (desertification affects 70 percent of the country), and heavy smog in Ulan Bator
- The development and spread of tropical diseases and previously unknown parasites, which are posing an increasing threat to the health of people and the country's wildlife

CLIMATE PROTECTION AND ENVIRONMENTAL POLICY

Mongolia is a member of numerous international agreements, including the UNFCCC, the CBD and the UNCCD. It ratified the Kyoto Protocol in 1999. However, the most important document concerning government environmental policy is the National Action Plan on Climate Change, which was adopted on 6 January 2011 and will remain in force until 2021. The main goals are to reduce greenhouse gas emissions by promoting environmentally friendly technologies, and to increase energy efficiency in the energy sector. The National Renewable Energy Program has been in force since 2007. Its most important provision stipulates that renewable energies should be covering 20 to 25 percent of total energy generation by 2020.

CLIMATE CHANGE AND THE ENERGY SECTOR

Mongolia has sufficient environmental laws, but there is still room for improvement in their implementation. The bare figures are sobering. Ninety-two percent of Mongolia's energy is generated by seven coal-fired power plants that were built during the socialist era and mainly use untreated raw coal. Renewable energies cover just three percent, and some 600 diesel generators account for the remaining five percent. The energy sector thus continues to rely heavily on coal, and energy production and consumption are based on inadequate technology and poor efficiency. However, investments in expanding renewable energies, particularly wind power, are on the rise. According to the Wind Energy Development Roadmap for Mongolia, wind should be covering around a fifth of national consumption by 2020. Meteorological data from the National Renewable Energy Center shows that the country has average wind speeds of between 7.5 and 8.5 metres per second. Last year, Mongolia put its first ever wind farm – totalling 50 megawatts – into operation in Salkhit, close to Ulan Bator. Solar energy and hydropower are also receiving increasing support. With 257 cloudless days every year, Mongolia is one of the world's sunniest countries. Over the past decade, the government has been introducing small solar electricity systems for Mongolia's nomadic communities. The technology can compete with their traditional energy sources. The country has been having success with hydropower plants since 1959. Two new systems have just gone into operation, and others are in the pipeline.

OUTLOOK

The Mongolian government, and in particular the environment ministry, is anxious to limit the negative impact that the country's rapid economic growth is having on the environment. By working with international organisations like the United Nations and its development and environmental programmes (UNDP and UNEP), and with the support of the World Bank, the Asian Development Bank and GIZ, the government is trying to reform Mongolia's finance and energy sector. The country collaborates closely with numerous non-governmental organisations and in particular with German political foundations to improve environmental awareness among the Mongolian public. In 2008, the Mongolian parliament adopted a National Development Strategy based on the Millennium Development Goals (MDG). The fifth national MDG progress report, which was published on 3 December 2013, confirmed that Mongolia was on track – including with regard to the environment – to achieve two-thirds of its goals by 2015. However, the situation for Ulan Bator's 1.4 million residents (almost half of the country's population now lives in the capital) has not improved a great deal. Until the old coal-fired power plants undergo sufficient modernisation, and as long as an estimated 600,000 people continue to heat their yurts or small homes by burning wood, coal and rubbish in basic stoves, the city will see no improvement in air pollution in particular. Environmental problems in rural areas also remain largely unsolved. For instance, around 100,000 informal miners continue to work in artisanal mining projects that rely heavily on mercury for extracting gold from its ore. The list of shortcomings could go on. As far as the vast majority of Mongolians is concerned, all is quiet on the environmental front.

Average annual temperatures have risen 1.2 °C in the Altai highlands over the past 50 years; the valleys have seen an increase of 3.5 °C.

REPUBLIC OF KOREA

Norbert Eschborn | Michelle Kunz

THE END OF GREEN GROWTH?

Environmental and energy policies in the Republic of Korea have undergone major changes since Park Geun-hye took office after her election as president in December 2012. Some sections of the press called the shifts a "policy change" that would bury the country's existing green growth strategy.

The former president, Lee Myung-bak (in office from 2008 to 2013), launched the green growth policy as one of the signature projects of his time in office. He declared that the political objective was for the approach to achieve a harmonious mix of environmental protection and economic growth. It was also clear that this new policy was to become an engine for growth and employment that was at least as good as, if not better than, the "old" economy and its traditional industries, which had long since lost the ability to drive the country forward. Lee also hoped that his strategy would help the country make a leap forward with the forward-looking technologies necessary for protecting the climate and the environment. Despite this, however, South Korea had not given up on its long-standing goal of becoming the world's leading exporter of nuclear technology. Also, the green growth policy classified nuclear power as green energy.

Even though the new government, which took office in February 2013, is again being led by the conservative Saenuri party and by a president who is the party's former chairman, it is not pursuing the environmental focus of its predecessor. It has undone the previous government's decision to add the word "green" to the names of four of the highest governmental authorities responsible for environmental and climate-related issues. This move was first and foremost designed to distance Park from her unpopular predecessor. However, it also expressed a certain lack of interest in environmental issues among the members of the new administration.

The new government received criticism early on for its own political agenda, as observers considered it vague and not particularly far-reaching. Environmental experts and activists hoping for coherent concepts and action plans were disappointed.

At the 2007 UN Climate Change Conference in Copenhagen, South Korea announced that it would reduce its greenhouse gas emissions by 30 percent by 2020. To achieve this, the Lee administration introduced the Target Management Scheme, which required some 500 companies and institutions to define emission reduction targets and threatened them with penalties if they failed to meet them. This was the first step towards an emissions trading system that was due to be introduced in 2015. In 2010, however, South Korea's greenhouse gas emissions rocketed by nearly ten percent compared to the previous year – the highest annual increase since 1993. The government said the situation was due to extreme hot and cold weather conditions, and to increased vehicle and steel production. President Park subsequently tasked her environment minister with undertaking a critical review of the emissions target to establish whether or not it is actually achievable.

Green growth was one of the most important legacies of the Lee Myung-bak administration. It was one of the very few policy areas that earned the deeply unpopular leader widespread approval.

In hindsight, however, green growth is increasingly becoming the subject of criticism, with some describing it as purely politically motivated and largely insubstantial. The Lee government provided extensive financing for renewable energy pilot programmes, which never achieved the level of commercial viability that could have created new markets. Now the new government is using this to obscure, by scaling back authorities and institutions, the remains of Lee's legacy.

However, experts urged the new administration to take up green growth's original intention, correct the shortcomings and continue the initiative in an improved form. This is in line with public opinion, with the vast majority of South Koreans seeing something good and useful in the policy. The Korea Environment Institute, a think tank, recommended to the Park government that it should focus on a few relevant environment and climate goals, such as reducing greenhouse gas emissions and adapting to climate change, rather than trying to change the entire environmental sector.

THE IMPORTANCE OF ENERGY SECURITY

South Korea is an emerging economic power that depends enormously on exports. As such, energy security is one of the most important prerequisites for ensuring that its development success lasts and for avoiding political and military vulnerabilities should crises arise. Fossil fuels and nuclear energy make up a large share of the country's energy mix. The former all have to be imported via crisis-prone routes, while the latter serves the country's desire to be a global technology power – even though public confidence in nuclear energy has fallen since Fukushima. South Korea's industrial conglomerates are the only ones still in favour of massively expanding nuclear energy. Their support is largely motivated by their own interests and ignores the considerable security concerns that have arisen on the basis of current inspections and events in 2013 linked to South Korea's reactors.

In terms of nuclear energy, which is a constituent part of the country's energy security planning, the new government's energy plan recommends reducing nuclear power's share of the national energy mix to 22 percent by 2025. The previous plan aimed for 41 percent. Since nuclear power currently makes up around 26 percent of electricity generation, this could, in the medium term, radically alter the situation for building new nuclear plants. In addition, the committee for the National Energy Master Plan has recommended that the share of renewable energies in energy generation should rise to 11 percent and that the share for developing new energy resources should rise to 40 percent.

International conferences held recently in Seoul discussed supplying the Korean Peninsula with pipeline gas as part of multilateral energy cooperations. The talks were the result of an agreement signed in September 2013 between Russian energy corporation Gazprom and China National Petroleum Corporation that sets out the main framework for a future Sino-Russian gas supply contract. Starting from the assumption that a Sino-Russian gas partnership would have massive energy and security implications for the entire region, experts identified several options for Korea's gas supply, though these should be scrutinised from the perspectives of security and profitability. Nevertheless, there is a great deal of support for the idea that this kind of energy diplomacy could play an important role in advancing political relationships in northeast Asia.

Despite, or perhaps because of, increasing tensions over territorial claims, it is extremely important that the countries of northeast Asia cooperate on other levels. Northeast Asia leads the world in terms of energy demand and should therefore play a committed role in the field of energy cooperation so as to ensure energy security for the entire region.

PERCEPTION OF GERMANY'S ENERGY TRANSITION

As part of the national debate on its own energy future, South Korea also refers to Germany and its energy transition. However, Korean opinions as to the consequences and risks of the transition are divided. It can be hard to communicate experiences from Germany in Korea because the government has expressed concerns about the probable high costs and political risks that could result if Korea pursued its own energy transition. Local experts believe a Korean energy transition could only succeed if the country succeeded in striking a balance between politically motivated decisions and stability in energy prices. They point out that, with renewables now making up two to three percent of the energy mix, South Korea has slid down the international rankings, while also noting that, as a G20 member, the country is lagging behind international expectations and should undertake wide-reaching international commitments to properly perform its role in the international community.

THE COUNTRY'S ROLE IN INTERNATIONAL CLIMATE POLICY

When President Lee Myung-bak was in office, South Korea worked hard to improve its global environmental profile. When Songdo, close to Seoul, was selected as the location for the headquarters of the secretariat of the UN Green Climate Fund in autumn 2012, it seemed that the country's efforts had paid off. The Lee government cheered the victory in the media and described the secretariat as a "second World Bank". There is no longer any talk of that – a fact that was reflected in the relatively low-key opening of the secretariat in October 2013. What was once expected to be a major media event disappeared into the middle pages of the newspapers.

Green is still not a colour that plays a central role in the Republic of Korea's political life or in the political consciousness of its people.

SINGAPORE

Dilpreet Kaur

According to a publication put out by the National Climate Change Secretariat, Singapore has "a deep interest in global efforts to address potential disruptions to natural ecosystems and human societies… [It] has always been a strong supporter of multilateral approaches to global issues. A system in which all countries are guided by common rules will provide assurance that each country is doing its part. These considerations are particularly important for trade-dependent countries like Singapore. Ultimately, a global approach that successfully reduces the harmful effects of climate change will also provide more conducive conditions for Singapore's long-term growth and development. This is why Singapore supports the multilateral negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol, as well as other key UN specialised agencies such as the International Maritime Organisation (IMO) and the International Civil Aviation Organisation (ICAO)."[1]

Compared to the rest of the world, Singapore produces relatively few carbon emissions:

- Singapore is responsible for less than 0.2 percent of global emissions.[2]
- Singapore ranks 123rd out of 137 countries in terms of its carbon emissions per US dollar of GDP.
- Singapore ranks 27th out of 137 countries in terms of per capita emissions (see fig. 1).
- Singapore's refineries and petrochemical sector are among the country's biggest carbon emitters.[3]

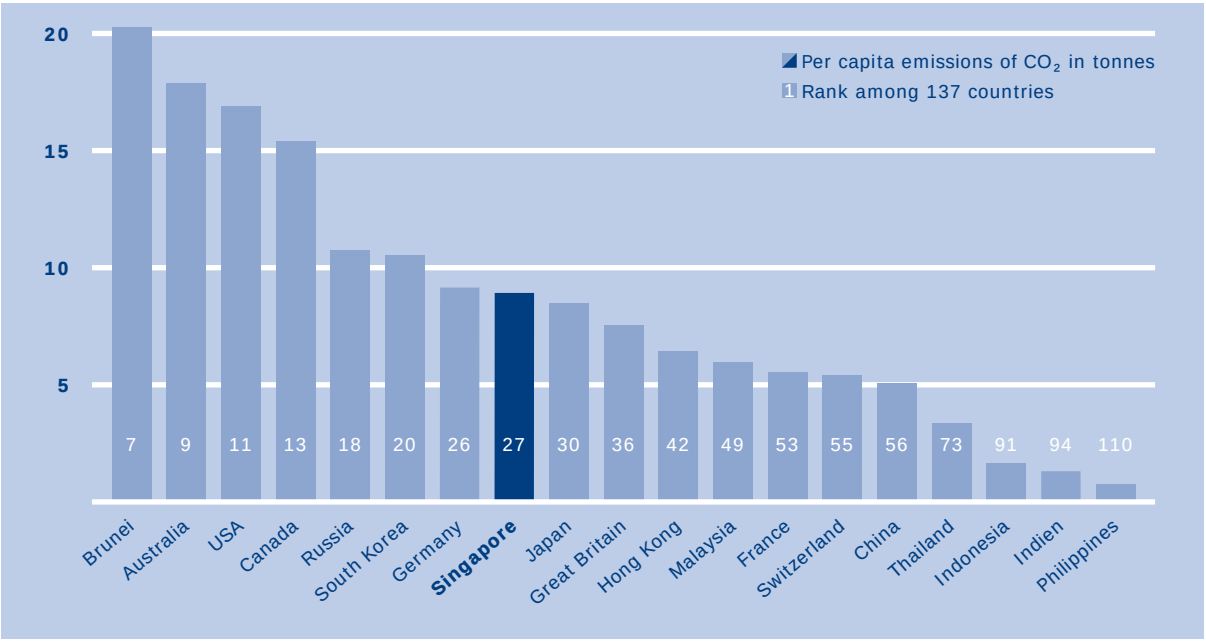
Singapore ratified the UNFCCC in 1997 and joined the Kyoto Protocol in 2006. Since then, it has been an active participant in the convention and has already submitted two national communications.[4] The country promotes relationships between ASEAN cities, as well as cooperations between the cities and partner countries such as China, Japan and the Republic of Korea, and with ASEAN dialogue partners and international organisations.[5] One example of this is Singapore's cooperation with China in the Sino-Singapore Tianjin Eco-City project,[6] which runs skills training sessions[7] that give the partner countries the knowledge they need to limit the effects of climate change and improve the way they manage their energy resources.

Singapore is also leading the field at the regional level. One example of this is the implementation of the ASEAN initiative for environmentally sustainable cities – a movement for ASEAN states that aims to promote environmental sustainability through cooperation and the exchange of expertise. Singapore also chairs the ASEAN Working Group on Environmentally Sustainable Cities.[8]

At the bilateral level, Singapore has spent many years working with German companies on developing environmental technologies. The Germany-Singapore Environmental Technology Agency (GSETA) was set up in 1991 as a useful platform that would allow Asia-Pacific countries to discuss strategies and policies for protecting the environment.[9] "It is jointly administered by Singapore's Ministry of the Environment and Water Resources (MEWR) and Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). GSETA-organised events have served as a useful platform for Asia-Pacific countries to discuss environmental protection strategies and policies."[10] Another example is the German-Singaporean Business Forum (GSBF), which was founded in 1994.

1 | National Climate Change Secretariat (NCCS), "National Climate Change Strategy 2012 – Climate Change & Singapore: Challenges. Opportunities. Partnerships.", 2012, p. 7, http://app-stg.nccs.gov.sg/data/resources/docs/Documents/NCCS-2012.pdf [28 July 2014].
2 | Ibid.
3 | Ibid.
4 | National Environmental Agency, "Climate Change", 2 September 2013, http://app2.nea.gov.sg/energy-waste/climate-change [25 April 2014].
5 | NCCS, "Singapore's Emissions Profile", 28 June 2013, http://app.nccs.gov.sg/page.aspx?pageid=158&secid=157 [28 July 2014].
6 | N. 1, p. 12.
7 | Ministry of the Environment and Water Resources, "The Singapore Green Plan 2012", 2006, http://app.mewr.gov.sg/data/ImgCont/1342/sgp2012_2006edition.pdf [28 July 2014].
8 | Ibid.
9 | Ibid., p. 67.
10 | Ibid.

FIG. 1: PER CAPITA CARBON EMISSIONS



Source: NCCS (see n. 5).

> *"Whatever we do, maintaining economic competitiveness is a key consideration because we have to preserve growth in order to have the resources to continue to take mitigation and adaptation actions."*
>
> Senior Minister Shunmugam Jayakumar[11]

At the national level, Singapore's discussions of climate change happen within the context of national and international energy and energy security policy. The country set up an inter-ministerial committee for climate change in 2011 and tasked it with strengthening collaboration and policies for promoting green growth and securing the country's energy needs. This committee (see fig. 2) is made up of economic and trade agencies, the Ministry for the Environment and Water Resources, and the Ministry of Foreign Affairs. As Jayakumar says in the quote above, economic considerations must be taken into account in all discussions relating to Singapore's energy security. Singapore is dependent on resource-rich countries. In view of the fact that energy resources are declining and that the new trend is towards green growth, Singapore had to make some changes to its energy security policy. However, its energy policy will still largely be governed by the energy industry, energy security and the limitations imposed by Singapore's environment,[12] and that without impinging on national interests.

At the local level, the effects of climate change are making themselves felt in annual flash floods, higher annual precipitation levels[13] and events such as hailstorms. According to Dr Winston Chow,[14] climate change is one of the factors contributing to this situation. However, increasing levels of urbanisation are also creating major challenges for the country.[15]

11 | Interview with Senior Minister Shunmugam Jayakumar, 2 December 2009. Donaldson Tan, "Does Singapore have a climate change policy?", *The Online Citizen*, 17.12.2009, http://theonlinecitizen.com/2009/12/does-singapore-have-a-climate-change-policy [31 July 2014].

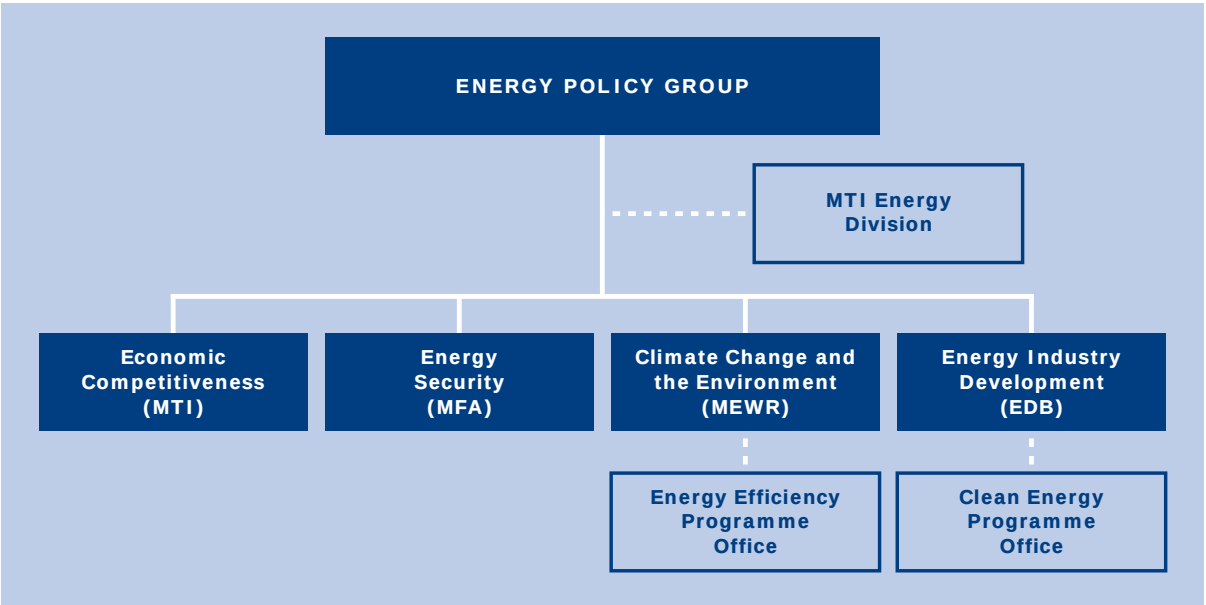
12 | Ministry of Trade and Industry Singapore, "Energy for Growth. National Energy Policy Report", 13 November 2007, p. 22, http://www.mti.gov.sg/ResearchRoom/Documents/app.mti.gov.sg/data/pages/885/doc/NEPR%202007.pdf [28 July 2014].

13 | "Climate change affects Singapore Flood Risk", *Channel News Asia*, via Youtube, 22 September 2013, http://youtu.be/dKB4s9U5ECI [28 July 2014].

14 | Assistant Professor, Department of Geography, National University of Singapore.

15 | "Interview with Dr Winston Chow", *Channel News Asia*, via Youtube, 11 November 2013, http://youtu.be/rWzH14eno7s [28 July 2014].

FIG. 2: INTER-MINISTERIAL COMMITTEE ON ENERGY POLICY



Source: Singapore Ministry of Trade and Industry (see n. 12, p. 26).

Mitigation measures that the country has been implementing since the 1970s need to be strengthened. Singapore also recently set a target for renewable energies: 350 megawatt-peak of solar power by 2020. That equates to about five percent of peak electricity demand in 2020 and represents a significant increase over current installed capacity (15 megawatt-peak).[16]

Companies in Singapore are also being encouraged to implement greener measures. The Building and Construction Authority introduced the Green Mark certificate in 2006.[17] The scheme ensures that companies take account of and implement strategies that are kinder to the environment. The state also implemented the Energy Conservation Act in 2013 in order to set minimum energy management standards for energy-intensive companies / industries and to make these businesses more energy efficient.[18]

A number of public-private partnerships exist, such as the Responsible Energy Advocates Programme, which is an initiative developed by PowerSeraya in partnership with the National Environment Agency and the South West Community Development Council.[19] The programme trains students to work as young energy advocates, who visit households with the aim of making energy consumers more aware of ways to save costs. Households are responsible for 17 percent of Singapore's total energy consumption, but projects like this one have helped cut their consumption by 15.8 percent.[20] Furthermore, NGOs like the Asia Research Institute and the Energy Studies Institute at the National University of Singapore organise public discussions and forums to keep pace with international developments in climate change. Civil society groups like Green Drinks hold regular discussions with interested members of the public.

The National Climate Change Secretariat (NCCS) carried out studies investigating the public's perception of the issues in 2011[21] and 2013.[22] They produced the following findings:

16 | S. Iswaran, Second Minister for Trade and Industry, Committee of Supply Debate, 6 March 2014.
17 | "Cool red dot, part 2 – documentary commissioned by NCCS", 4 September 2012, via Youtube, http://app.nccs.gov.sg/page.aspx?pageid=195&secid=7 [7 May 2014].
18 | National Environment Agency (NEA), "Energy Conservation Act", 2013, http://app.mewr.gov.sg/data/ImgCont/1386/2.%20Factsheet_Energy%20Conservation%20Act%20%5Bweb%5D.pdf [31 July 2014].
19 | National University of Singapore, Office of Environmental Sustainability, "PowerSeraya presents REAP – Responsible Energy Advocates Program", 1 April 2010, http://nus.edu.sg/oes/prog/do/greenalert/apr0111_reap.html [31 July 2014].
20 | N. 17.
21 | NCCS, Prime Minister's Office Singapore, "Climate Change Public Perception Survey", 2011, http://app.nccs.gov.sg/data/resources/docs/AnnexB.pdf [31 July 2014].
22 | NCCS, "Climate Change Public Perception Survey", 2013, https://app.nccs.gov.sg/data/resources/docs/Documents/Appendix%20I.pdf [31 July 2014].

- Over 70 percent of respondents are concerned about climate change.
- NCCS reports a persistently high level of public interest in the topic.[23]
- However, people assume that dealing with climate change is first and foremost a task for the state. This became clear in the 2013 study, which showed that significantly more respondents (up 13.8 percent over the previous study) felt the state needed to implement more measures.

Other studies carried out by the Energy Studies Institute at the National University of Singapore indicate that there is little chance of citizens choosing greener approaches to the way they consume energy:[24]

- Total household consumption has risen significantly, that is by a third (partially due to the growing number of households).
- This has happened in the face of rising prices, which shows that consumers do not react much to having to pay more for their power. Ultimately, just 1.3 percent of a household's income is spent on electricity.[25]
- Therefore, more needs to be done to reduce electricity consumption in households. This is particularly necessary in light of the fact that households reducing their energy consumption by between 10 and 16 percent is part of the government's overall plan to cut carbon emissions so that, by 2020, they are between 7 and 10 percent lower than what they would be in a business-as-usual scenario.
- Energy consumption observers say that using tools like social media and advertising in shopping centres could help encourage the public to play a bigger part.[26]

In conclusion, it should be noted that the media play a key role in disseminating information about Singapore's policy on climate change. The NCCS produced a TV programme called *Cool Red Dot* for broadcast on Channel NewsAsia. It aims to raise awareness of the effects of climate change and of what individuals can do to curb those effects. However, some observers point out that large-scale media outlets such as *The Straits Times, Today,* and Channel NewsAsia confine themselves to reporting only on the government's announcements regarding climate change. Alternative media blogs and websites bring more investigative and critical content to the discussion. *The Online Citizen,* for instance, debates the ecological intentions of political decision-making on the environment in Singapore.[27] Independent magazines, among them *Innovation,* criticise the extent of Singapore's explicit commitment to reducing carbon emissions.[28] The point about obstructionism is worth mentioning, as most countries could afford to make further-reaching commitments on climate change.

23 | NCCS, Prime Minister's Office Singapore, "Public Consultation and Perception Survey reflect strong public interest in climate change", 9 February 2012, http://app.nccs.gov.sg/news_details.aspx?nid=580 [31 July 2014].
24 | Woo Sian Boon, "Not watching tv now? Then turn it off", *Today Online*, 15 June 2012, http://wildsingaporenews.blogspot.sg/2012/06/singapores-strategy-to-fight-climate.html [31 July 2014].
25 | Energy Market Authority, "Singapore Energy Statistics 2012", http://www.ema.gov.sg/media/files/publications/EMA_SES_2012_Final.pdf [31 July 2014].
26 | Ibid.
27 | Tan, n. 11.
28 | Natasha Hamilton-Hart, "Singapore's Climate Change Policy", 2014, *Innovation Magazine,* Vol. 12, No. 1, http://www.innovationmagazine.com/innovation/volumes/v9n1/coverstory4.shtml [31 July 2014].

THAILAND

Michael Winzer

PUBLIC ARE ACUTELY AWARE OF THE INCREASE IN EXTREME WEATHER AND HEAVY FLOODING

Extreme weather events such as droughts, heavy rain, storms and extreme temperatures have become increasingly regular occurrences in Thailand over the past few years. In 2011, for instance, large swathes of the country suffered serious damage after being hit by devastating floods. While January 2014 brought Bangkok its coldest recorded temperatures for 30 years, by April the temperatures had been so high for so long that the extensive use of air conditioning systems caused electricity consumption to surpass the previous year's peak. Large sections of Bangkok also lie less than a metre above sea level on average. Given that the capital is the economic heart of the country and home to millions, the effects of rising sea levels could be devastating. As a result, Thailand's policy makers, scientists, the media and the public are, as a rule, very aware of climate change and its possible consequences.

However, the second half of 2013 saw a renewed escalation of the political conflict between anti-government protestors and the opposition, which has now left numerous people dead or injured. This means that the public, policy makers and the media are focused almost exclusively on the political and social conflict between the two camps. Given that climate change is not an issue in the conflict, general awareness of the topic has declined. Key public institutions have stopped functioning as a result of the unrest. Parliament, for one, was dissolved in early December 2013, but it is not yet clear when new elections will be held. An interim government is currently in place but has only limited rights. The breakdown of some political institutions and the limitations of others are also to blame for the fact that, at the political level in particular, discussions about climate change are almost non-existent. The political conflict, which led to the military imposing martial law across the whole country on 20 May 2014, is dominating media reporting and political and public discussions throughout Thailand, and has largely forced other important issues, among them climate change, off the public agenda.

THAI POLICY MAKERS GENERALLY SEE ENERGY SECURITY AS A HIGH PRIORITY

Thailand is currently the second largest consumer of energy in the ASEAN region. Since the country has only small deposits of petroleum and natural gas, it is currently highly dependent on imports of these fossil fuels. Among ASEAN countries, Thailand is second only to Singapore in terms of the size of its net oil imports. Thailand imports more than 60 percent of the energy it consumes, at a cost that equates to 11 percent of its GDP. Rapid economic growth in some parts of Thailand, a structural shift from an agricultural economy to one based largely on industry and services, and the emergence of a middle and upper class with strong purchasing power have all combined to cause a significant rise in energy consumption and hence also in energy imports. Petroleum and natural gas currently meet around 80 percent of the country's energy demand, making them Thailand's most important sources of energy today. Furthermore, demand is expected to keep rising in the coming years. Calculations done by the Thai energy ministry assume that energy demand will grow by 4 percent each year over the next few years. Experts say the country will be facing a shortfall in its energy supply as early as 2020. In particular, coal, renewable energies and possibly also nuclear energy are expected to meet the rising demand. They are also expected to fill the gap being left by the decline in domestic gas production. Estimates say that Thailand's gas production could fall by 50 percent between 2017 and 2024. Despite additional efforts to improve energy efficiency and thereby at least curb the rise in demand, Thailand will remain heavily dependent on oil, gas and electricity imports in the coming years.

Energy security is a big locational advantage and crucial to ongoing economic growth. Thailand is acutely aware of this, which is why the government has accorded energy security a high degree of importance on its political agenda. The state oil and gas company, PTT, has expanded globally in recent years and now owns, among other things, an 8.5 percent share in a gas field in Mozambique. The government elected in 2011 thus also aimed to secure and improve energy security and energy efficiency. In an effort to reduce dependency on energy imports, the government has set a target of having renewable energies cover 25 percent of consumption by 2021 and of making manufacturing 25 percent more efficient in terms of electricity consumption over the next two decades.

Thailand is also considering using nuclear energy as an alternative to fossil fuels. If the political conflict and the resulting paralysis affecting legislation and administration continue for much longer, there is a good chance that the country will be unable to take the political steps necessary for achieving these goals in time.

DIFFERENT PERCEPTIONS OF GERMANY'S ENERGY TRANSITION – OPENNESS FOR RENEWABLE ENERGIES AND NUCLEAR ENERGY

Given the geographical, linguistic and cultural distance that separates Thailand and Europe, Thailand follows only a few, specific political developments in Europe. Germany's energy transition is one of the relatively few topics that receives attention from experts in Thailand. Germany also has a very good reputation in Thailand regarding its engineering expertise in general and its competence in renewable energies in particular. Thailand is extremely interested in German technologies for renewable energies and energy efficiency. State agencies in Thailand also have close links with Germany's environment ministry, and the staff exchange information on issues relating to the climate and the environment.

With regard to the nuclear phase-out, though, Thailand does not see Germany as setting an example it should follow. In 2011, following the disaster at Japan's Fukushima nuclear plant and the radiation it released, the Thai government initially said it would turn its back on nuclear energy. However, in light of rising energy demand and the foreseeable decline in domestic natural gas production, Thailand has returned to thinking out loud about introducing nuclear energy and building nuclear power plants from 2020.

THAILAND WANTS INDUSTRIALISED COUNTRIES TO TAKE MORE RESPONSIBILITY FOR CLIMATE PROTECTION

So far, Thailand has not set itself any binding targets for reducing greenhouse gases within the scope of international climate change policies. It is, however, supporting the process of reaching a multilateral deal on climate change. It has signed and ratified the Kyoto protocol, and has hosted a variety of international conferences on the topic over the past few years. Given that extreme weather events and a further rise in sea levels would affect Thailand particularly badly, the country is doing its best to help bring about a global deal on halting climate change. It believes that industrialised countries have a particular responsibility in this regard. Speaking at an international conference in late 2010, Thailand's environment minister said that, while the challenges of climate change required an approach based on the principles of equality and unity, they also demanded a differentiated division of responsibilities. Thailand also believes that technology transfer from industrialised countries to developing and newly industrialised countries is extremely important for promoting green technologies.

What is certain is that Thailand will be hit especially hard by the effects of climate change and that a growing demand for energy and a high level of dependency on imports will make its energy supply more prone to shortfalls in the future. Politicians and the public are aware of both these issues. However, years of political conflict and the resulting standstill are blocking the planning and implementation of further essential measures for avoiding climate change, adapting to its effects and improving energy security. The best example of this is the official national strategy for addressing climate change, which came into force in 2008 and expired in 2012. A new plan for a national strategy from 2013, which would have continued on directly from the previous one, was drawn up several years ago and now exists as a draft. However, the country's political instability and numerous changes of government mean the document has still not been approved. The dissolution of Thailand's parliament in December 2013 will keep the draft on the back burner for some time to come.

VIETNAM

Rabea Brauer | Vu Dang Tuan

CLIMATE OR THE ECONOMY? VIETNAM'S ATTEMPTS TO BALANCE GROWTH AND THE ENVIRONMENT

How do you achieve harmony between economic prosperity and a decisive climate policy? Governments all over the world are facing this dilemma and trying to tackle the serious challenges presented by the reciprocal relationship between economic policy and climate policy. The Vietnamese government, like so many others, is taking the problem very seriously and knows that climate change will affect the country's economic development. With this in mind, Vietnam has spent the past few years successfully constructing a climate policy framework designed to minimise the harm that climate change can do to economic development.

The National Target Program to Respond to Climate Change (NTP – RCC),[1] which is closely aligned with the international regulations of climate legislation, forms the institutional framework for Vietnam's climate policy and was adopted on 2 December 2008. The National Committee for Climate Change was founded on 9 November 2011 and tasked with drawing up a detailed climate strategy. The National Climate Change Strategy)[2] was ready and approved by December, and will run until 2050.

CLIMATE STRATEGY VS ECONOMIC DEVELOPMENT

The current climate strategy contains ambitious targets and takes extensive account of the ways in which climate change can affect economic development. Businesses are to become less energy intensive and greatly reduce their energy consumption. The industrial and construction sectors alone are the focus of targets that aim to make 90 percent of industrial plants more environmentally friendly in terms of energy, fuel and materials consumption by 2020.

The industrial and construction sectors make up some 39 percent of Vietnam's GDP (US$155.8 billion in 2012)[3] and 52.5 percent of the country's total electricity consumption.[4] This means industry and construction are not just important cornerstones of the Vietnamese economy, but also its most energy-intensive sectors. Another target involves raising the share of renewable energy sources in electricity generation from around 3 percent today to 4.5 percent by 2020 and 6 percent by 2030.[5] Vietnam's climate policy does not, in principle, conflict with the country's socio-economic development strategy up to 2020. Under the strategy, Vietnam has set itself the ambitious task of becoming an industrialised country by 2020. It also says energy consumption should be cut by 2.5 to 3 percent, and that all new companies and their plants should use "clean" technologies.[6] Vietnam's development plans are closely linked to measures designed to protect the climate and save energy.

ENERGY POLICY: COAL AND NUCLEAR POWER

Although Vietnam has very comprehensive frameworks for its climate and energy policy, there are justified doubts about the practicability of the strategy and its compatibility with economic development. This is reflected in the current climate and energy policy. Right now, it is impossible to consistently pursue the goal of balancing an effective climate policy with a low-carbon economy. This is because the goal is at odds with current developments in Vietnam's energy sector.[7] Germany Trade & Invest says that, in contrast to Germany's energy policy, Vietnam has made the construction of coal-fired power plants a top priority, and this despite the fact that the country has considerable potential when it comes to renewable energies (hydropower, biomass, nuclear energy).

1 | Soc. Rep. Vietnam, Ministry of Natural Resources and Environment, "National Target Programme to Respond to Climate Change (NTP-RCC)", 3 December 2007, http://bit.ly/1u3Pjdq [31 July 2014].
2 | Soc. Rep. Vietnam, Government Portal, "National strategy on climate change", 5 December 2011, http://chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10051283 [31 July 2014].
3 | The World Bank, "Vietnam", 10 May 2014, http://data.worldbank.org/country/vietnam [31 July 2014].
4 | Thomas Hundt, "Vietnam leitet 'Energiewende' zur Kohle ein" (Vietnam initiates energy transition to coal), German Trade & Invest, 9 May 2014, http://bit.ly/1qNx26z [31 July 2014].
5 | VientamEnergy, "National Master Plan for Power Development for the 2011–2020 Period with the Vision to 2030", 8 March 2014, p. 2, http://nangluongvietnam.vn/news/en/policy-planning/national-master-plan-for-power-development-for-the-2011-2020-period-with-the-vision-to-2030.html [31 July 2014].
6 | Soc. Rep. Vietnam, Government Portal, "Vietnam's Socio-economic development strategy 2011–2020", 8 November 2011, http://bit.ly/XkgENO [31 July 2014].
7 | Hundt, n. 4.

Coal, gas and oil are on track to be covering 72.4 percent of Vietnam's electricity generation by 2020 (they accounted for 53.8 percent in 2012).[8] The idea is that support for fossil fuels will help meet Vietnam's energy demand, which is already high and is set to keep growing. The Ministry of Industry and Trade estimates that electricity consumption will increase by an average of 9.3 percent by 2020. The fact that the share of non-renewable energies in electricity production is rising more than that of renewable energies is a clear indication that the intended climate strategy cannot currently be implemented as planned and that it deviates from the original development strategy. This tallies with the decision to delay, due to a lack of framework and safety conditions, the construction of the Ninh Thuan nuclear power plant, which was planned for 2020. Thirty more nuclear power plants were due to follow by 2030, but it is likely they will also be delayed.

Acacia trees in the Ba Che district. Reforestation projects are helping to transform monocultures into mixed forests that are used in a sustainable and environmentally friendly way.

The reason for this lies in the country's economic development over the past few decades. When the doi moi reforms were introduced in 1986, the Vietnamese economy began growing very fast. Up until 2007, growth was always between seven and eight percent. However, things have cooled off a lot since 2008. The country has experienced years of macroeconomic instability, with the banking and financial crisis doing a lot of damage to its economy. Although a recovery has set in over the past two years, economic output is still a long way off Vietnam's original targets. These years of unexpectedly low economic growth, mostly around five percent, have left Vietnam lagging behind the economic targets set out in its development plan. The weak economic development is putting the government under increasing political pressure. As a result, Vietnam's leaders currently have a great deal of interest in helping the country regain its previous economic momentum. The focus for the short and medium term is therefore on economic development. From a political perspective, this is not surprising, given that the legitimacy of the Communist Party of Vietnam derives mainly from Vietnam's economic ascent over the last few decades. In the wake of the economic crisis years, the government not only has to implement effective economic policy measures – it also has to introduce energy policy measures that support the economy, such as providing support for coal. The public are not exerting any pressure on the government with regard to its climate and energy policy, as they, too, are focusing primarily on economic development.

Vietnam's journalist association says that while reporting on climate-related issues is gradually increasing, media and public interest in the topics is still in the early stages. This means the government currently has no incentive to pursue its climate and energy policy persistently enough to actually achieve the targets that have been set. This highlights the weak point in Vietnam's climate strategy. Although the government has recognised the long-term economic opportunities that an innovative climate and energy policy can create, errors of economic judgement have led to overblown expectations and thus to an unrealistic climate strategy. The original plans assumed average economic growth of between 7 and 8 percent up until 2020.[9] However, the past three years saw growth of just 5.6 percent.[10] Yet even at the time that the National Climate Change Strategy was being decided, it was clear that the economy would not recover so quickly and that the country was unlikely to achieve the development strategy's economic target by 2020. Vietnam therefore cannot implement its climate and energy policy as planned because it is based on conditions that are no longer realistic.

8 | Hundt, n. 4.

9 | N. 6.

10 | The World Bank, "GDP growth (annual %)", http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries [28 July 2014].

WHERE NOW FOR VIETNAM'S CLIMATE POLICY?

Given the economic situation and the fundamental faults in the design of the climate strategy, one has to assume that Vietnam is essentially not yet ready for such an ambitious climate strategy. It lacks funding structures for renewable energies and the absolute political will and resolve to pursue the intended climate policy during times of economic crisis. Another, even more important issue is that the current economic conditions do not allow for such an ambitious climate strategy. As a lower-middle-income country, Vietnam does not yet fulfil the requirements necessary to put this kind of strategy into practice. This is because it needs more than just the political will for implementation (which is undeniably present in the Vietnamese government) – it also has to have the financial resources over the long term. The government could decide to adapt its climate and energy policy so that it fits the current conditions. Whether or not it does so any time soon, however, remains to be seen.

CENTRAL ASIA (KYRGYZSTAN, TAJIKISTAN, TURKMENISTAN, UZBEKISTAN)

Thomas Kunze | Christopher Braemer

OVERVIEW

Even though climate change is given very little consideration in the public's mind and despite it only being discussed by niche players in government and civil society circles, its impact is already making itself felt in central Asia. This primarily affects the region's two main waterways, the Amu Darya and Syr Darya Rivers, which originate[1] in Kyrgyzstan and Tajikistan and once flowed into the Aral Sea. A study conducted as early as 2004 found that climate change was having a great number of effects on central Asia, particularly in the areas of water supply and water quality. The region's water reserves – the mountain glaciers in Kyrgyzstan and Tajikistan – are melting faster and faster and cannot regenerate sufficiently due to the lack of rainfall in winter. The rapidly melting glaciers may result in mudslides and subsequently cause the silting of the rivers, which provide drinking water. According to an Oxfam study,[2] the changing climate is particularly affecting Tajikistan, the poorest of the five central Asian countries. The change in weather conditions is most evident here, and the extreme poverty of the people of Tajikistan makes the country the least able to adapt to the changes.

When UN Secretary-General Ban Ki-moon visited the former port city of Mo'ynoq in April 2010, he called the drying up of the Aral Sea "one of the world's worst environmental disasters". This is because the Aral Sea's drying is contributing to both central Asian and global climate change. Without the evaporating sea water, the air in summer is becoming even drier and hotter. The Amu Darya and Syr Darya Rivers, which once flowed into the Aral Sea, lose almost 90 percent of their water to farming along their courses. The remaining river water is highly salinated, and is also contaminated with pesticides due to agricultural sewage being dumped back into the river. The wind swirls the dust containing salt and pesticides from the dried-up Aral Sea and the river beds and carries it hundreds of kilometres away. Lung diseases and cancer, also among children, are becoming increasingly common.

These human-induced factors still play a role today in central Asia barely being able to adapt to the new climate conditions. Although experts have been widely aware of the worsening water supply situation for decades, almost nothing has been done to tackle the problem. Water is extremely cheap, which is why people tend to use it liberally. Many water lines and pipes leak, and irrigation systems often run during the daytime causing the majority of the water to evaporate before it even reaches the ground. As a result, Uzbekistan has invested in new technology in recent years, a projected supported by funding of around US$1 million from international donors. Yet the Swiss

1 | Ernst Giese and Ivo Moßig, "Klimawandel in Zentralasien" (Climate Change in Central Asia), Centre for International Development and Environmental Research, University of Giessen, Discussion Papers, No. 17, Giessen, 2006, http://fss.plone.uni-giessen.de/fss/fbz/zentren/zeu/Forsch/Publi/publi2/disc17/file/DiscPap_17.pdf [28 July 2014].

2 | Anita Swarup, "Reaching Tipping Point? Climate Change and Poverty in Tajikistan", Oxfam International, Research Report, Dushanbe, 2009.

Until the second half of the 20th century, Mo'ynoq in western Uzbekistan was a port city on the southern shore of the Aral Sea. Due to the drying up of the sea, it now lies roughly 150 kilometres away from the coast.

Agency for Development and Cooperation (SDC) and the World Bank predict that it would cost US$40 billion to modernise the entire irrigation infrastructure in central Asia. Technical measures alone are not the solution, but they are an important component of an overall strategy of sustainable resource management.

The growing of cotton, which constitutes a large part of the agriculture sector, was heavily expanded during the Soviet era and remains an important economic factor today. Cotton is a very water-intensive plant, however, and the majority of water is needed during cultivation. All central Asian states have gradually scaled back their cotton-growing since independence. Uzbekistan, the largest cotton producer in central Asia, has reduced the amount of land set aside for cotton-growing from 50 to 30 percent of its entire irrigated land, yet it still remains one of the ten largest cotton producers worldwide.

WATER SHORTAGE: CONFLICTS BETWEEN HIGH-LYING AND LOW-LYING STATES

All in all, climate change in central Asia amounts to one thing: water shortage. What makes the situation in central Asia particularly complicated is that the "high-lying" countries, that is, the countries situated in the upstream parts of the rivers, have control of the water. In central Asia that is Kyrgyzstan and Tajikistan. The countries situated in the downstream parts of the Amu Darya and Syr Darya Rivers are what are called "low-lying" countries: Kazakhstan, Uzbekistan and Turkmenistan. There are no longer other tributaries that feed into the rivers within their territories. This means that the low-lying countries only receive the water that is left to them by the high-lying countries.

The water demand in the high-lying countries has grown significantly in recent years. A Tajik statement in December 2010 in Cancún, Mexico, mostly pointed to Tajikistan's hydropower potential, which it claimed would be able to satisfy the energy needs of the entire region by expanding its hydropower, without producing any emissions. It is true that there is huge potential, primarily in Tajikistan and in Kyrgyzstan as well. However, this would make Uzbekistan, Turkmenistan and Kazakhstan entirely dependent on the two mountainous countries for their energy and water supplies. The whole region is threatening to become a ticking time bomb. It has already come to a head recently, with military tensions starting to escalate between the high-lying and low-lying countries.

GOVERNMENT STANDPOINTS: UN CLIMATE CHANGE CONFERENCES IN COPENHAGEN (2009) AND CANCÚN (2010)

A north-south divide exists in central Asia with regards to how environmental problems are perceived. Kazakhstan, for instance – the most economically developed of the central Asian countries – has already set up a Climate Change Coordination Centre. This centre was born out of the working group of the commission established by the Kazakh government to deal with matters relating to the ratification of the Kyoto Protocol. In addition, Kazakhstan and Uzbekistan have national environmental programmes, and Kazakhstan's programme lists climate change prevention as one of its most important goals. A number of local NGOs in Kazakhstan are also focusing on the topic of climate change. With a GDP per capita of US$346 a year, southerly Tadzhikistan is at the bottom of the economic ladder in central Asia along with Turkmenistan. Here, poverty and economic hardship are still extremely widespread in a number of regions. In Tadzhikistan, for instance, at least two-thirds of the population are living below the poverty line. It is therefore unsurprising that the climate change discussion plays almost no role in these countries, as the majority of the population is busy dealing with concrete economic problems of their own.

The staffing levels of the central Asian delegations at the 2009 UN Climate Change Conference in Copenhagen demonstrated how little importance the central Asian countries place on international community's efforts in the area of climate protection as a whole: with the exception of Tadzhikistan, none of the countries were represented at ministerial level. But awareness of climate change and its effects on central Asia is beginning to increase among officials. At the 2009 UN Climate Change Conference in New York, for instance, the Uzbek ambassador to the United

Nations, Murad Askarow, declared that climate change represented a challenge for all humankind. He also stated that the central Asian officials are aware that their region is particularly affected by climate change. In the same year, at a meeting of the central Asian heads of government in Almaty, Kazakhstan, climate change was mentioned as an additional factor in the drying up of the Aral Sea for the very first time. On a state visit to Japan in February 2011, Uzbek President Islom Karimow's statement that the Cancún Agreements represented an "outstanding result"[3] raised the question of to what extent more intense cooperation between the five countries could have better addressed the challenges of climate change. On the whole, the Cancún Conference in 2010 received barely any coverage in the central Asian media. In the run-up to the conference, the official standpoints of the central Asian countries were rarely accessible to the public, and there is no information to suggest that any joint consultation on content or other matters took place.

As early as 1992, the five central Asian states signed the Agreement on Cooperation in the Field of Joint Water Resources Management and Conservation of Interstate Sources. They also founded the Interstate Commission for Water Coordination (ICWC), which was the first regional institution to emerge following independence and is to this day the only regional organisation that all five central Asian states belong to, operating under the umbrella of the International Fund for Saving the Aral Sea (IFAS). But this organisation and many others still continue to lack interstate cooperation and the joint initiative of the central Asian countries.

Also on the agenda for the future – particularly for Kazakhstan given its status as the most economically advanced of the central Asian countries – is a discussion on how to reduce CO_2 emissions.

Nuclear power as a low-carbon alternative to energy production from fossil fuels is barely discussed in central Asia – despite the fact that the region possesses an enormous uranium deposit and is an important supplier for the global nuclear industry. Only Kazakhstan is pursuing the use of nuclear power as a source of energy.

PERCEPTION WITHIN CIVIL SOCIETY

After more than 20 years of independence, civil society in the majority of the central Asian states is still nascent, and the topic of climate change still takes a back seat to issues such as basic public services and economic development. Furthermore, many NGOs involved in environmental conservation lack enough resources and the necessary framework conditions to really tackle the issue. In recent years the topic of climate change has barely been broached in the media. The driving forces promoting the topic of climate change continue to be international organisations – particularly the United Nations and its affiliated organizations.

FUTURE PERSPECTIVES

The landlocked central Asian states are still in a process of transformation where the international debate on climate change receives, at most, passing attention. Furthermore, the central Asian states are still failing to develop and implement strategies on how to deal with climate change, which could have very serious consequences for the region. Regional water management in particular needs to be improved in order for water resources to be used more economically and, above all, to prevent loss of water through leaking pipes. In addition, plant-based agriculture needs to be converted to a system reliant on crops that require less water and can tolerate extreme heat and an abundance of sunshine. New irrigation concepts also need to be introduced. So central Asia currently finds itself confronted with the challenge of shedding the environmental burden it inherited from the Soviet era and with the task of rectifying current ecological shortcomings. But what will really matter above all else in the coming years will be improved regional cooperation between the central Asian states.

3 | "Joint Statement between Japan and the Republic of Uzbekistan", *Uzbekistan Daily*, 9 February 2011, http://uzdaily.com/articles-id-13126.htm [31 July 2014].

LATIN AMERICA

ARGENTINA

Kristin Wesemann

The effects of climate change are readily apparent in Argentina too. In Buenos Aires province in February it is no longer unusual for heavy rainfall to cause severe flooding. Violent storms have also occurred with increasing frequency in recent years in the coastal region of Buenos Aires province and have repeatedly included lightning strikes that have killed holiday makers.

Equipped with 20 turbines, the Yacyretá dam on the Paraná River at the border between Paraguay and Argentina supplies around a quarter of Argentina's electricity needs.

Meanwhile, the interior of the country and the foothills of the Andes are suffering from droughts.

Short-term solutions to the effects of these extreme weather events are being pursued, such as installing lightning rods on the beaches of Buenos Aires. The goal of these plans is to reduce the very real hazards posed to humans and buildings. However, a long-term, sustainable strategy for Argentina to face the challenges of climate change is lacking. Although the country has ratified numerous international environmental agreements such as the CBD, the UNFCCC, the UNCCD and the Kyoto Protocol of 2001, it has made no concrete commitments to reduce greenhouse emissions, nor is it engaged in any national or bilateral programmes in this regard.

The topics of climate change and global warming have virtually no resonance in terms of public opinion. The major newspapers *Clarín* and *La Nación* generally only cover these issues when there is a high-profile event such as a climate summit, and even then only peripherally. Awareness in society as a whole is low, and concrete steps and measures remain for the most part a secondary activity of local NGOs or personal initiatives by individual political figures.

There is a widespread perception in Argentina, as in much of the continent, that although the country is particularly affected by climate change, it is not one of the major contributors. The position adopted by the Argentine president, Cristina Fernandez de Kirchner, is that developing countries cannot afford to implement environmental protection measures at the cost of economic growth, and that it is above all the main culprits of climate change, the industrialised nations, that must be held accountable. There have been calls for the industrialised nations to provide financing for the measures required to mitigate the effects of climate change. To this end, the 2009 UN Climate Change Conference in Copenhagen resolved to establish a fund focused on climate change adaptation, into which the industrialised nations are to pay US$100 billion each year until 2020 to support developing nations with projects devoted to adapting to climate change. However, Argentina receives practically no money from the fund as it has not proposed any projects.

Argentina has yet to come up with a national strategy against climate change. Other issues, such as security or the economy, are accorded greater importance. There is to date no environmental programme worthy of the name at the national level. This leaves local initiatives against climate change, the achievements of which are negligible in light of the global complexity of the problem.

One example is the Ciudad Verde programme by the government of the city of Buenos Aires. Under this programme, the city has begun to launch projects to mitigate the capital's high level of carbon emissions. With investments in the public transport system, cycle routes and free bicycle rental, the city is seeking to make a start in protecting the environment. In addition, attempts are being made to reduce waste and raise awareness of the benefits of sorting rubbish in cooperation with citizens and public bodies. However, the political motivation behind these projects is prima-

rily to improve individual quality of life, while pursuing a sustainable environmental policy remains only a secondary goal.

Argentina's efforts in the field of renewable energy are also at a rudimentary stage. Potentially, the country's climate and geography are such that it could cover its entire energy needs with clean, renewable energy and even export energy to other countries; estimates suggest that the country could supply the entire continent with electricity generated from wind power. With the Andes as a water reservoir, extensive areas with steady winds and a large amount of sunlight, Argentina boasts excellent conditions for sustainable electricity production. Especially in terms of wind power the country's potential is enormous – and yet it still remains largely untapped. Instead, its energy needs are met primarily with gas and oil imports, which cost the country US$1.8 billion in 2008. The amounts spent on energy are obtained almost exclusively from farming exports and associated taxes. This single source of financing makes the energy supply highly insecure, all the more so given the huge impact of climate change on agriculture. The same funds could be invested in expanding the renewables sector at the national level, thereby reducing future costs and promoting innovation. This would be of great benefit – not just in economic terms, but in ecological terms as well. As electricity is heavily subsidised by the state, neither private households nor power companies have any incentive to invest in alternative energy sources.

Law no. 26.190 / 2006 promises to bring change. Argentina plans to generate eight percent of its electricity from renewable sources by 2016. The companies involved will receive a premium of 15 pesos (around €1.40) per megawatt-hour in addition to certain tax benefits. However, state support for renewable energies in Argentina remains below average, while protectionist economic policy substantially hinders the international transfer of knowledge required for the energy sector to develop in a new direction and also dampens investor interest.

Germany is known in Argentina for the trailblazing role it has played in energy policy. The country is portrayed in the Argentine media as a pioneer of renewable energies and energy efficiency. Although Germany's decision to abandon nuclear energy was briefly a topic of interest, the government is still pursuing nuclear energy by building new reactors. But on a fundamental level, there is little awareness of European and German initiatives and policies in the field of climate and energy due to a lack of political and social debate on such matters.

For various reasons, Argentina is a relatively insignificant player on the stage of international and multilateral climate policy. One reason for this is that the country produces just one percent of global emissions (not counting the methane emissions from cattle farming). Economic and demographic developments mean that per capita emissions are set to rise. In addition, national debate on energy policy and the shift to renewables is at a rudimentary stage. This can be attributed to a lack of technological resources to set such a shift in motion. What is more, the influence wielded by Argentina in the international scheme of things is dwindling, preventing it from playing a significant part in multilateral climate discussions. Overall, it can be said that little attention is devoted to this issue in Argentina. The result is a significant gap between the wide-ranging international discourse on climate policy and the limited debate that takes place within the country.

Nevertheless, there are incentives for Argentina to become involved in multilateral discussions and global policy formulation. These include in particular the effects of climate change, to which the country is especially vulnerable. As an agricultural nation, fluctuations in crop yields can have far-reaching consequences for the national economy. Even so, there is insufficient political will for the country to actively participate in the discussion and pursue a collective climate and energy policy within the framework of the UN bodies. As a result, Argentina's role appears to be that of a free rider on the efforts of other countries to forge a global agreement, one that will require concessions from all member states. During the 65th UN plenary session on climate change on 24 September 2010, President Kirchner voiced the following criticism: "It is unjust that developing countries must bear the responsibility for the effects of climate change," adding that "It is not fair for developing countries, which have hardly been able to improve poverty and bridge social gaps through their economic growth, to bear the brunt of the environmental liabilities that have historically been created by developed nations, which have polluted the world for decades." The Argentine government has maintained this defensive stance so far, without putting forward any alternatives.

BOLIVIA

Dirk Hoffmann

INTERNATIONAL PIONEER WITHOUT A NATIONAL CLIMATE POLICY

Bolivia is one of the world's biggest carbon emitters – at least in per capita terms. This is due largely to the vast amounts of carbon released in the course of unbridled deforestation in the lowlands and the ubiquitous practice of slash-and-burn agriculture. On top of this, considerable amounts of methane, another major greenhouse gas, are released as a result of cattle farming in the northern and eastern lowlands and as an unwanted by-product of natural gas production.

At the same time, Bolivia is among the countries in which the effects of climate change are most evident: in the last 50 years, the surface and volume of the country's glaciers have fallen by around 50 percent due to melting caused by global warming. If warming continues as expected, within the next 20 years practically all smaller and lower-altitude glaciers will have disappeared, which will take a corresponding toll on the hydrological cycle.

Other effects of climate change include the increased frequency of extreme weather events such as droughts and flooding, both of which are natural occurrences in Bolivia due to the influence of the El-Niño/La-Niña phenomenon, but which have taken on a new level of intensity in recent years. For instance, a recent scientific study concluded that the dry season has become three weeks longer over the course of the last 30 years, with the rainy season shortening accordingly. As overall precipitation levels have remained roughly constant, rainfall is heavier, causing more erosion and flooding as a result of the increased run-off.

In many lowland areas, the massive rainfall and resulting floods that occurred in early 2014 were the most extreme since records began. Entire areas were submerged for weeks; around 60 people and many thousands of cattle died.

AWARENESS

Media awareness of the phenomenon of climate change remains dominated by the rapid melting of the glaciers. Even several years ago, for instance, President Evo Morales spoke of the loss of the "white ponchos" in reference to the role played by the mountains in Andean mythology as guardians watching over the fate of the people.

The rural and indigenous populations must come to terms with the fact that the yearly rhythm of the seasons is being thrown further and further into disarray. In 2013, for instance, rainfall was recorded for several days of every month of the dry season, which is highly unusual. Against this backdrop, the natural indicators still widely used to determine sowing periods, such as the nesting behaviour of certain birds or the blossoming of particular plants, are becoming less and less useful, causing a feeling of insecurity among the population.

THE PLURINATIONAL STATE OF BOLIVIA ON THE INTERNATIONAL STAGE

The United Nations is regarded by Bolivia as an effective mechanism with which to make the concerns of a small country heard at a global level. Accordingly, for many years UN climate negotiations have been used by the Morales government as a stage on which to present its own perspective, portraying itself as a victim of climate change and pointing the finger at the northern industrialised nations as the main culprits. Although this approach has resulted in worldwide media attention, it has yielded nothing in the way of concrete results.

Since the country's lead climate negotiator, Pablo Solón, was replaced following the COP16 climate conference in Cancún, Mexico, in 2011, the key figures in shaping Bolivia's international climate policy have been Diego Pacheco and René Orellana. Under their leadership, the country's strategy on the international stage has undergone profound change. Even though Bolivia continues to adopt radical positions such as the complete rejection of market-based emissions trading, the country's focus is now more on achieving majorities for its positions. European climate and energy policy are not acknowledged by either the population or the government.

The Altiplano Plateau between the western and eastern Andes. As the Andean glaciers recede, the tributaries of Lake Titicaca are running dry.

DECOUPLING FROM NATIONAL CLIMATE AND ENERGY POLICY

While the government continues to forcefully articulate its discourse on climate change on the international stage provided by UN climate conferences, climate debate at the national level is virtually non-existent. There is no national climate policy in place. Since the integration of the former national climate programme PNCC into the Ministry of Environment and Water in February 2009, official documents are almost impossible to obtain, and the corresponding website has been taken offline.

In addition to its rising cocaine exports, Bolivia's current economic model is based primarily on gas exports, soya products and mining. The expansion of soya-growing areas in the eastern lowlands is one of the main causes of deforestation and associated greenhouse gas emissions.

Current policy for the energy sector prioritises exploiting existing gas reserves and exporting them to Brazil and Argentina. At the same time, efforts are being made to connect the urban population to the public gas grid, and support is being provided for the replacement of petrol with liquefied gas as fuel for the country's vehicles. However, the positive impact of the latter two measures with regard to climate change is questioned by experts in light of the large amounts of methane released in the gas production process.

Bolivia has no energy security policy as such in place. However, both the opposition and independent experts are warning that the country's gas reserves are limited, and that this must be taken into account in a sustainable energy policy that includes longer-term planning measures.

Notwithstanding the heavily publicised inauguration of a wind turbine in Cochabamba by the president last year, the subsidies provided to fossil fuels make a significant expansion of renewable energies practically impossible. The price of petrol and diesel fuel is significantly below the world market price, as is that of electricity for private consumption.

As a result, the creation of a national climate policy is no easy task. The government's priority is currently the implementation of the Law of the Rights of Mother Earth and the creation of a national authority for this purpose. This authority will be the home of the future three-pronged climate policy: besides the joint mechanism for forest management, the policy will comprise a component for emissions reduction and another for climate change adaptation. The corresponding documents and a first draft for a national climate policy are in preparation. In parallel, work is under way on the third national communication to the UNFCCC, albeit so far with no significant participation from leading members of society.

Although the current political situation is not a favourable one for independent environmental organisations, such organisations are making efforts to establish common positions on international climate negotiations and to prompt the government to follow up its international climate discourse with actions at the national level.

BOLIVIA'S DEVELOPMENT PROGRAMME

The government has established a medium-term development plan in the form of its Patriotic Agenda 2025. In spite of all its lip service to "Mother Earth", the 13-pillar programme can only be described as a traditional development agenda based on the extraction of natural resources. Climate change, humanity's greatest challenge of the 21st century, is mentioned only in passing.

Despite a brief reference to the technological development of renewable energies, hardly any importance is attached to the issue. By contrast, the strategy to expand mining and gas and oil production as a key task for the future features all the more prominently. Pillar 6 states: "We are in the course of a historic process of consolidation of these strategic sectors as key pillars – though not the only ones – of the economy of the Plurinational State of Bolivia to promote the full development of the Bolivian people." As a result, the reliance of the country's energy and economic model on fossil fuels is cemented without even addressing the challenge of climate change.

Equally questionable from the perspective of the environment and climate change is the goal of becoming a country which "exports electricity on a large scale" thanks to "full use of our hydropower potential" by 2025. The latest studies on the climate-related effects of large hydropower plants in tropical rainforest regions indicate that the amounts of methane released as a result of the construction and operation of these plants would in many cases more than negate the supposed benefits of hydropower as a climate-friendly alternative.

Only half a sentence is dedicated to the preservation of natural forests. The impact of expanding agricultural areas, justified in terms of food security and sovereignty, counteracts any potential efforts towards fighting carbon emissions.

OUTLOOK

Given the high likelihood that the government led by Evo Morales will be re-elected in October 2014, there can be little hope of an effective national climate policy in light of the development model it proposes. Indeed, exports of mining products and the development and production of natural gas are likely to be accelerated further, given their status as the main source of income for the state apparatus.

Deforestation (in particular of the Amazon rainforest) will continue at a fast pace, traffic will grow significantly and implementation of a national climate policy will at best be initiated slowly.

What hope there is lies with the sub-national governments. At this level, interesting initiatives to deal with climate change can be observed, such as the climate change adjustment plans of the Santa Cruz Department or the capital city La Paz.

BRAZIL

Felix Dane | Kathrin Zeller

BRAZIL – OFF THE GREEN PATH

Brazil ranks 89 in the long-term index of countries affected by climate change. This means it is not among those nations considered most at risk from extreme weather events, according to an analysis by the NGO Germanwatch. However, the picture changes if other indicators are taken into consideration. In the same ranking for 2011, Brazil placed sixth due to the more than 1,000 fatalities caused by landslides in the southeast part of the country. Meanwhile, in 2013, northeast Brazil – the country's poorest region – suffered the worst drought in the last 50 years. The southern and northern areas of Brazil were also not spared from severe weather issues. According to IBGE, the government statistics agency, between 2008 and 2012 around 41 percent of all municipalities were affected by flooding, which left 1,406,713 people homeless. In spite of this, to date only around 48 percent of municipalities possess crisis management instruments.

Furthermore, Brazil is not just a victim of climate change, but also occupies fifth place in the list of countries with the highest carbon emissions. While per capita emissions are only around a quarter of the European average, they are set to rise as the country becomes more developed. After Brazil briefly made headlines with the claim that it had reigned in deforestation and thereby the country's main source of emissions, levels once again rose significantly in 2012 and 2013.

The issue of environmental protection is a prominent one in the Brazilian media. As a result of serious problems in waste management and local transport, the population exerts considerable pressure on politicians in contrast to the rather abstract debate on climate change found elsewhere. However, the demands made concern first and foremost the quality of services, while protecting the environment remains a secondary detail. For instance, although public transport was one of the main issues behind the vast protests staged last year, the complaints were aimed exclusively at affordability and passenger capacity.

Similarly, with regard to natural disasters, the demands made by the populace are generally for better crisis management and relief for those affected. Preparation for a number of such incidents is therefore a second step, which has so far mainly been discussed in expert circles. Various instruments for the imple-

mentation of policies devoted to preventing carbon emissions and adapting to the effects of climate change are already in place. For example, the Ministry of the Environment has access to financing for both of these areas. However, there are complaints on the part of the federal states and above all the cities of a lack of transparency in the application procedures. At the same time, the Ministry for the Environment, one of the awarding bodies, decries the shortage of professional project applications. These two factors combined mean that funds often remain unclaimed, or that projects exist only on paper.

Brazil's energy mix, calculated in terms of domestic energy production, is among the world's greenest, with renewables accounting for 42.2 percent of the energy generated in 2012. According to the Ministry of Mines and Energy, more than 80 percent of the country's renewable energy is produced by hydropower plants. However, a decline of around 2 % observed from 2011 to 2012 is regarded as the first sign of a reversal in this trend. The decline was caused by a shortage of rainfall, an occurrence which could become more frequent in the future as a result of climate change. The question of energy security therefore remains at the heart of the Brazilian debate. Bottlenecks are exacerbated by rising demand, which is currently being met with power generated from gas and coal. Besides making the energy mix less sustainable, this is also affecting industry, which is also reliant on the gas supply. Meanwhile, the government is continuing its efforts to build more dams, while making only token efforts towards diversification.

Production of ethanol, another renewable energy source, is generally only criticised in Europe as posing an environmental hazard. Indeed, in Brazil, the world's leading exporter of ethanol, this aspect receives far less attention than in Germany. Ethanol is instead hailed as a triumph in the struggle to reduce carbon emissions. Accordingly, the announcement by President Dilma Rousseff of a slight increase in the proportion of ethanol included in diesel fuel was met with no resistance from the population. The intention behind this measure is to reduce the high costs incurred by the state-controlled company Petrobras with diesel imports. In the run-up to the election in October, President Rousseff wants to prevent inflation caused by rising fuel prices from exceeding the 6.5 percent mark at all costs. Meanwhile, the ethanol industry is struggling to cope with the effects of fixed prices and the lack of predictability with respect to energy policy. The upshot is that in this area of the energy industry too, investment levels fall short of Brazil's potential.

Another component of the energy mix, with a share of around two percent, is made up of the nuclear power stations Angra I and Angra II in the state of Rio de Janeiro. However, last May Brazil's national commission for nuclear energy (CNEN) expressed concerns about the continued operation of the plants as the interim storage facility was approaching full capacity. This would not only cause the existing reactors to be shut down, but could also lead to delays in the start-up of Angra III. In the meantime, construction work has been scaled back and around 1,000 workers have been let go, making the expansion of Brazil's nuclear power capabilities an uncertain prospect – at least for the time being.

By contrast, the share of wind energy in the country's energy mix rose from 0.5 percent in 2011 to 0.9 percent in 2012. Decentralisation and a focus on renewable energy sources such as solar or wind could contribute to greater energy security for Brazil.

Generator hall of an oil-powered thermal power plant in the coastal city of Camaçari, in the federal state of Bahia.

As shown by the expert interviews in the study "The Perception of Germany's Energiewende in Emerging Countries", in Brazil the German energy transition is not only regarded as an ambitious project, but also one that can undoubtedly succeed in a country of planners and engineers. There are doubts regarding the costs involved, particularly when the energy transition and its possible applications are discussed in the Brazilian context. The energy transition has drawn criticism with regard to the possibility of importing nuclear power from neighbouring countries, which has cast some doubts over the project's credibility. There is absolutely no prospect of the energy transition

being regarded as a project for society in a whole, in which the population plays an active part.

In terms of the discussion surrounding environmental justice, Brazil is a staunch proponent of the concept of a historical debt owed by the countries of the industrialised West. Without wishing to belittle the argument's moral aspect, it is however clear that even the acknowledgement of a historical debt cannot lead to a solution. The newly industrialised countries alone are today responsible for causing more than three times the maximum level of carbon emissions that the IPCC estimates would be necessary to limit global warming to just two degrees.

Even though the Kyoto Protocol does not set out binding reduction targets for newly industrialised and developing countries, at the Copenhagen Conference in 2009 Brazil voluntarily agreed to reduce greenhouse emissions by almost 40 percent by 2020. The supervisor of the emissions report published by the Brazilian economics ministry, Danielly Godiva Santana de Souza, announced in May that this target will in all likelihood be met, given that reductions of 36 percent had already been achieved by 2011. The bulk of these reductions can be attributed to the decline in deforestation, which once again poses the question of whether Brazil is still on course to meet its target in light of the latest figures on this issue.

How Brazil's negotiating position will develop in the future depends in part on the outcome of the presidential elections. An abrupt change of course is hardly to be expected even in the event of victory for the current opposition parties. However, the list of candidates includes environmental activist Marina da Silva, who is standing for the post of vice-president. On the other side of the fence, the more economically liberal PSDB party is also in the running. Success for this party could usher in new possibilities for a decentralised energy policy.

CHILE

Holger Haibach

On 21 May 2014 Michelle Bachelet, who was elected president of Chile for the second time in March, delivered her speech on the state of the nation. Among other topics, she addressed the issue of climate change, warning that phenomena such as high temperatures and droughts are no longer just one-off events, but could be regular occurrences in the coming years. At the same time, she made it clear that this is not merely due to natural causes, but that the population is also partly responsible as a result of practices such as excessive consumption of water. Bachelet's speech left no room for doubt that both climate and energy policy would occupy a central role in her government programme.

Climate change has therefore made its way onto the new Bachelet government's political agenda. What is more, of the 56 measures that she plans to tackle in her first 100 days in government, those concerning environmental and energy policy have already been implemented. This includes a comprehensive Energy Agenda. The population is also increasingly paying attention to the issue of climate change, mainly because Chile is a country that is frequently affected by natural disasters and the effects of climate change (melting of the glaciers, declining water supply, drought). Particularly farmers in the affected regions in the isolated northern and southern parts of the country are devoting more and more of their attention to this increasingly urgent issue. Climate change is regarded as an obstacle to the economy, a cause of social inequality and a threat to the food supply. In general, awareness of climate change in Chile is rising among politicians and the population alike, although the will to change mentalities and take concrete steps must be strengthened further.

President Bachelet's government programme gives priority to energy policy in general and energy security policy specifically. The Energy Agenda forms a part of her economic policy and is supposed to play a fundamental role in the daily lives of Chilean families and the development of Chile's economy. Bachelet maintains that the country's dependence on fossil energy sources must be reduced and renewable energies developed in order to keep pace with the changes in climate policy that are occurring globally. Chile imports 60 percent of its primary energy, making it dependent on price fluctuations and instability, as well as the supply limitations caused by political and

climate-related factors and the vicissitudes of the energy market. In her speech, Bachelet mentioned a number of aspects in which Chile is lagging behind other countries with regard to energy.

Her new government intends to address the most pressing problems with its Energy Plan, which comprises the following key points:

GOALS OF THE NEW GOVERNMENT'S ENERGY PLAN

- Lowering the cost of electricity supply in the next decade for households, businesses and small enterprises by 25 percent in comparison to the prices quoted in the last tender process
- Raising the share of renewable energies in the energy mix to 20 percent by 2025
- Increasing efficiency in the consumption of energy
- Creating a system to stabilise fuel prices

Besides addressing key issues in energy policy, the government's Energy Agenda includes aspects of public policy as well:

PUBLIC POLICY PRIORITIES OF THE NEW GOVERNMENT

- A new role for the state in the evolution of the energy sector (including expansion of the energy ministry and modernising the supervisory authority for electricity and fuels)
- Reducing energy prices by means of enhanced competition, efficiency and variety on the energy market (price benefits for long-term clients, use of liquefied gas instead of diesel in electricity generation)
- Developing the country's own energy resources (support for renewables and hydropower, use of wood as an energy source [bioenergy])
- Expanding national and regional energy grids
- Creating an efficient energy sector that regulates consumption (new energy efficiency law, campaigns and training programmes on energy efficiency, support for energy management at the municipal level)
- Incentives for investment in Chile's energy sector (support for thermoelectric projects that meet environmental requirements and provide secure energy for the country, involvement of municipalities in the development of energy projects)
- Increased participation at municipal and regional level (including development of an agenda for hydropower)

The extent to which all these points can be addressed within the current president's term remains to be seen. Given that the country's primary export, copper, is obtained by means of a very energy-intensive procedure, it will be necessary to weigh many conflicting interests against each other.

The area of the world that receives the most direct sunlight – the Atacama Desert – is located in Chile: the 210 square kilometres of desert have the potential to produce enough electricity for the entire planet for a year. However, far too little is being done to tap this potential. According to experts, Chile could be a world leader in solar energy by 2020. The country possesses extensive natural resources that are so far not being exploited to the full, and which require greater support and development.

Chile has repeatedly sought to become more involved in multilateral energy policy, albeit generally in the areas of gas and fossil fuels, which are growing increasingly scarce. With regard to renewable energies, the prevailing opinion in Chile is that the country has enough potential to even export energy from renewable sources to other countries at some stage. However, to date only neighbouring countries, in particular Argentina, have been considered as potential buyers. While the role of the United Nations in the climate debate is respected, and the standards negotiated there with regard to the environment and climate are complied with, the country does not have a strong presence in terms of multilateral international climate policy. Although Chile is among the signatories of the Kyoto Protocol that are not required to reduce emissions, it has nevertheless made a commitment to participate in the development of the CDM. For the period following 2012, the country has agreed to reduce its expected emissions in the fields of energy efficiency, renewables, soil use and forest management by 20 percent by 2020, compared to its 2007 levels.

In parliamentary discussions, Europe is frequently cited as an example in terms of climate and energy policy. Although Chileans are aware of the importance of creating an appropriate energy policy and pursuing sustainability, progress achieved in this regard remains a long way from the European example. Spain is considered a role model for its wind energy, while Iceland is seen as a renewable energy pioneer in that it generates 100 percent of its electricity needs from renewable sources. Chile is particularly interested in Iceland's use of geothermal energy, as it too has untapped geothermal potential. However, even the European systems are by no means regarded as perfect; in Spain, for instance, the subsidies granted to renewables could no longer be guaranteed during the economic and financial crisis. While Germany is admired for generating 20 percent of its overall electricity needs from renewable sources, this system is not considered viable by the Chilean government as the majority of the costs are borne by end consumers. The transformation of Germany's energy model is regarded as promising and auspicious, but could not be implemented in Chile due to its high costs and the lower level of awareness in the Chilean population (among ordinary citizens but also at corporate and state level).

COSTA RICA

Graciela Incer | Henning Suhr

According to the IPCC, Costa Rica and the other Central American countries occupy a region in which the effects of climate change will be particularly severe. The most serious consequences are expected to manifest themselves in the intensity and variability of the rainy season and the prolongation of the dry season. A decline in rainfall is predicted in the generally drier parts of the country such as the northwest region and certain Pacific coastal areas. In contrast, in areas where flooding is common or those close to rivers (southern Pacific, plains on the Atlantic coast), increased rainfall is expected. Certain coastal areas are under serious threat from the forecast rise in sea level. It is even suggested that there could soon be two dry and rainy seasons: the rainy season (from May to November) would be punctuated by a dry period in July and August. Similarly, a brief period of rain could occur during the dry season.

Changes in temperature and rainfall will also have a socio-economic impact. In particular agriculture, transport infrastructure and the health sector will be

severely affected, resulting in a decline in quality of life. It is estimated that between 2005 and 2011 climate change has already caused damage amounting to around US$1.13 billion, mainly in coastal areas.

WILL COSTA RICA BECOME THE WORLD'S FIRST CARBON-NEUTRAL COUNTRY IN 2021?

Costa Rica's first measures to reduce greenhouse gas emissions began more than 20 years ago. The government's forward-thinking approach led to a successful programme of incentives for reforestation and certification programmes that rewarded environmental services (in the categories biodiversity, water, landscape and CO_2). More than 728,000 hectares – 14 percent of Costa Rica's territory – have been reforested since the programme was introduced in 1997.

In 2007, the Costa Rican government set itself the goal of becoming the world's first "carbon-neutral country" by 2021, approving to this end a national strategy aimed at adapting and limiting climate change (Estrategia Nacional de Cambio Climático, ENCC). In order to offset greenhouse gas emissions, a specific percentage of the country's territory is permanently kept in a forested state. The adaptation measures are aimed at reducing the vulnerability of society, infrastructure and the landscape to the effects of climate change. This includes protection of biodiversity and regulation of the hydrological balance, particularly in the more heavily affected coastal areas. In order to keep emissions in check, the national strategy prescribes increased use of modern environmental technology and improved financing opportunities for this technology, as well as more intensive awareness-raising measures.

Other parts of the strategy are devoted to enhancing the involvement of the private sector in, and the contribution of companies to, the pursuit of carbon-neutral goals. This focuses on the areas of competitiveness (enhanced productivity), promotion of carbon neutrality, research and development in the field of renewables, dissemination of information and development of the Mercado de Carbono programme (certification with the Costa Rica brand). In 2012, a mechanism based on ISO 14064 was introduced enabling companies to demonstrate their carbon neutrality. Greater energy efficiency enables companies to cut costs. In addition, companies receive certification for cleaner production processes, which they can use to market their products more effectively.

The ENCC is based on the National Development Plan, the Millennium Development Goals and various international agreements. With regard to the goals of carbon neutrality and adaptation to the effects of climate change, the national development plan and the ENCC overlap. The strategy's implementation is coordinated by a Climate Change Directorate (Dirección de Cambio Climático), which was established in 2010 as a subordinate agency to the Ministry of Environment and Energy.

DECLINING ENERGY SECURITY

Despite Costa Rica's profound commitment and its comprehensive strategy as to how climate change should be faced, the country's energy security is at risk in the wake of a sharp decline in the share of renewable energies in the electricity generation mix. A ranking published by the World Economic Forum in December 2013 had Costa Rica in 19th place out of 105 countries. The list takes into account economic, ecological and energy security aspects. Costa Rica was able to achieve this position in spite of the fact that renewables' share of its electricity generation mix fell from 95 percent in 2011 to 84 percent in 2012. This decline can be attributed above all to longer dry periods and a shortage of rainfall that had adverse effects on electricity generation from hydropower. In addition, the expansion of renewables capacity has failed to keep pace with the rise in electricity consumption of the last few years due to a shortage of private electricity producers. A significant obstacle is posed not by a lack of alternative solutions, but rather by contradictory political decisions and the lack of a suitable regulatory framework. According to Law no. 7200, the private sector is entitled to participate in the generation of electricity from renewable sources, albeit with a limited scope: the law permits the participation of private companies in projects of up to 50 megawatts, and stipulates that the aggregate of the projects may not exceed 15 percent of the total capacity of the electricity grid. The private sector could generate up to 30 percent of total capacity.

Costa Rica has no specific legislation to promote the development of projects involving renewable energies, or concrete incentives for private companies. Private electricity producers are only allowed to sell to the state-owned de facto monopoly holder, the Instituto Costarricense de Electricidad (ICE). Although there is separate legislation that regulates participation in energy generation from renewable sources and distribution between municipalities and provinces, there are no overarching regulations for developments in the field of renewables that guarantee operation and promote sustainable economic development.

COSTA RICA IN THE WORLD AND COOPERATION WITH EUROPE

Costa Rica ratified the UNFCCC in 1994 and the Kyoto Protocol in 2002. The country sent two communications to the Convention's secretariat: one in 2000 and another in 2009. After the Copenhagen Conference in 2009, Costa Rica informed the UN climate secretary of its intention to reduce emissions in an attempt to reach carbon neutrality by 2021. It also announced future improvements in the areas of transport and energy, forest conservation and wastewater treatment. In 1994 the country ratified the CBD, and has since made four national announcements in this regard, the latest in 2009. The national strategy for biodiversity, drafted in 2000, contained a number of steps to reinforce remuneration systems for environmental services already in place in the country. Costa Rica has also ratified the UNCCD, preparing a national action plan and three national reports to this end.

Costa Rica is regarded by Germany as a pioneer in resource and climate protection. Accordingly, international cooperation in environmental issues is taking on an increasingly important role. The IKI programme of the German environment ministry supports the implementation of nationally appropriate mitigation actions (NAMAs) under the MAIN (Mitigation Action Implementation Network) initiative. The partner institution in Costa Rica is the Ministry for Environment and Energy. Germany's international cooperation body supports the Costa Rican government in its climate protection efforts with a variety of programmes. By doing so, it also hopes to send a message to other countries in the region and the so-called middle-income countries with regard to climate protection. In addition, Germany and Costa Rica are important partners in regional projects such as the Mesoamerican Biodiversity Platform, Reducing Emissions from Deforestation and Forest Degradation, and Promotion of Renewable Energies and Energy Efficiency in Central America. Both countries appreciate the other's commitment to climate protection.

ECUADOR

Winfried Weck

Environment, climate and energy – these are the issues of the future that Ecuador's president, Rafael Correa, sought to adopt as the guiding principles of his left-progressive government policy after taking office in 2007. In addition to garnering a great deal of national and regional media attention, his groundbreaking work on the new constitution and his concrete political proposals also contributed significantly to the global discussion on alternative constitutional and political models. All that remains today is a profound sense of disillusionment in Ecuador and beyond over a single political decision with far-reaching consequences.

IMPORTANCE AND FUNCTION OF NATURE IN THE ECUADOR'S 2008 CONSTITUTION

From the very first year of his presidency, Correa laid the foundations of his long-term project for a complete overhaul of the Ecuadorian state in the form of a new constitution that provided the state's socialist structure with a dazzling new façade. In order to achieve Ecuador's ultimate goal – the all-pervasive, indigenous-rooted concept of "buen vivir"[1] (individuals and communities living in harmony and balance with nature) for all Ecuadorians – two central elements were needed: a progressive-socialist model based on a popular, solidarity-based economy (economía popular y solidaria) and a new definition of nature that sets out principles of governance for environment and energy issues.

Accordingly, under Title II, Section 7 of the Constitution of Montecristi (so named after the meeting venue of the constitutional assembly), nature is granted the status of a legal entity for the first time in history of the world's constitutions: Article 71 accords nature "the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes

1 | Cf. Winfried Weck and Carolina Landín, "'Good Living' and the 'Social and Solidarity-Based Economy' in Ecuador", *KAS International Reports*, 01/2014, pp. 57–82, http://kas.de/wf/en/33.36581 [28 July 2014].

in evolution", while Article 72 enshrines nature's right to restoration in the event of environmental damage. Furthermore, Article 71 explicitly empowers every person, community, municipality and nation[2] to protect the rights of nature and demand the recognition of such rights before state bodies. In addition, under Title II, Section 2, Article 15, the state is tasked with promoting environmentally friendly, clean technology and alternative, non-polluting forms of energy in both the public and private sector. The text continues: "Energy sovereignty shall not be achieved to the detriment of food sovereignty[3] nor shall it affect the right to water." This provision is repeated almost word for word in Title VIII, Chapter 7, Article 413, once again highlighting the interconnectedness of the concept of the good way of living and the necessity of using alternative energy forms as part of a holistic approach.

ENERGY POLICY AND INTENTIONS IN THE NATIONAL PLANS FOR THE GOOD WAY OF LIVING FOR 2009 – 13 AND 2013 – 17

Ecuador shares the fate of the majority of its Andean neighbours in that it is an exporter of primary goods, but has not been able to derive significant economic benefits for large parts of the population as the result of a trickle-down effect from its extensive raw material reserves, as practically all manufactured goods must be imported. For instance, in 2007 the country's energy balance was made up of 90 percent "energy generation" (of which 96 percent refers to low-quality crude oil from the Amazon region, which had to be exported unprocessed due to a lack of refineries, whilethe remaining 4 percent came from hydropower and biomass energy) and 10 percent energy imports (of which once again 90 percent were refined oil products, and 10 percent electricity imports). It was therefore a declared goal of the second Correa government, upon taking office in 2009,[4] to fundamentally change this situation. Concrete policies to achieve this aim were established in the National Plan for the Good Way of Living 2009 – 13 (Plan nacional del buen vivir, PNBV).

In Subsection 6.7 of the PNBV entitled Transformation of the Energy Matrix (Cambio de la matriz energética), the 2009 – 13 period was described as crucial for the planning and implementation of the major projects required for an efficient and environmentally friendly national energy system. The new matrix was to consist primarily in the realisation of new hydropower plants and the construction of a large refinery, given that the highest energy needs were those of the transport sector. Furthermore, remedying the significant energy losses sustained from the transformation process and from transport and more efficient use of energy by industry and private households were defined as additional key areas requiring further work.

In its evaluation of the preceding period, the PNBV 2013 – 17 mainly addresses the measures devoted to expansion of nature reserves. In addition, both the large refinery (refinería del Pacífico) and ten hydropower plants are in the planning stage or already under construction (the largest of these is the Coca Codo Sinclair hydropower plant, which has a capacity of 1,500 megawatts and is scheduled to go online in 2015, thereby fulfilling the constitutional provision of energy sovereignty), but still a long way from completion. What is more, experts state that despite these efforts, the target of generating six percent of the overall energy matrix from hydropower laid out in the PNBV 2009 – 13 has not been achieved.[5] This is due primarily to the fact that Correa's left-wing government is expediting the connection of private households in the countryside and in poor urban areas to the grid, and heavily subsidising electricity, with the result that Ecuador's energy needs have risen more sharply than in neighbouring countries (long-term average yearly consumption rose by 6.7 percent, compared to 4.6 percent in Peru and just 2.3 percent in Colombia).[6] This has led to considerations both by the Ecuadorian government and international companies as to how better use might be made of the country's thermal energy resources.

2 | Ecuador defines itself (as does Bolivia) as a 'plurinational state', with extensive basic rights for the many indigenous nations on Ecuadorian territory set down in its constitution of 2008.

3 | The term sovereignty is used here in the sense of autarky, as defined in other sections of the constitution for the food and energy sector.

4 | Following the adoption of the constitution of Montecristi on 28 September 2008, the parliamentary and presidential elections were held on 24 April 2009 in which Correa and his movement Alianza PAÌS emerged as the clear winners.

5 | The figures here are in part very confusing and depend largely on the respective reference parameters used. According to the country profile for Ecuador of the German Federal Ministry of Economic Affairs and Energy, 14 percent of Ecuador's primary energy consumption currently comes from renewable energy (including a relatively low share of liquid bio fuels, wind power and biomass using cogeneration plants). The target is to increase electricity from renewables to 80 percent by 2020. The Market Analysis Ecuador: Photovoltaic published by the Worldwide Network of German Chambers of Commerce (AHK) even states 96 percent electricity from renewable energy by 2020!

6 | Miguel Castro, "Matriz y política energética en Ecuador: realidades y propuesta estatal", Centro Ecuadoriano de Derecho Ambiental, Temas de análisis, 12 / 2011.

As regards climate change, manifested in the region above all in the form of the El-Niño phenomenon and rising sea level, the National Plan 2013–17 places the blame on the industrialised nations, while observing that those most affected are essentially the group of developing nations. At the same time, the targets set in the 2013–17 plan are formulated in a notably more restrained and general fashion than in the plan for the previous legislative period. For instance, the main focus of the current plan is on environmental education, research into making more effective use of alternative forms of energy and the gradual reduction of the use of fossil fuels in transport. Fossil fuel consumption by the transport sector is indeed relatively high, claiming a 55 percent share in the overall energy matrix (in neighbouring countries the same figure averages at 39 percent),[7] which can be explained by the heavy subsidies enjoyed by fuels and the resulting excessive use of automobiles and other vehicles for any transport need (1 gallon – or 3.79 litres – of diesel costs around US$1.09, while a gallon of premium-grade petrol costs around US$2.00).

However much Ecuador's left-wing government claims to be aware of climate and energy issues and portrays itself, on the basis of its innovative policy proposals, as a leading international figure in the rights of nature movement and in the fight against climate change, media coverage – and therefore public discussion – of the issues of climate change and alternative / renewable energies remain negligible. Even the German energy transition was acknowledged at best as a peripheral aspect of a global yet somehow distant discussion, even though for seven years Ecuador had its own unique environmental project, which Ecuadorians had every reason to be proud of: the Yasuni-ITT initiative.

YASUNI-ITT: THE SPECTACULAR BEGINNING AND SAD END OF AN ENVIRONMENTAL INITIATIVE

The initiative began in 2007, and lasted almost for the entirety of the Correa government's time in office. In 1979, a 982,000 hectare area of Ecuadorian rainforest was declared a national park by the Ecuadorian government, and ten years later designated a biosphere reserve by UNESCO. The park, named after the Yasuni River, lies around 250 kilometres east of the capital, Quito, and is one of the most biodiverse areas in the world as well as being home to numerous indigenous peoples, most of them still living in close harmony with nature. Also in the 1970s, major oil reserves were discovered in the Ecuadorian rainforest, including in the eastern part of the Yasuni National Park. Extraction was begun in areas outside of the park. According to the most recent estimates, the reserves amount to 846 million barrels of relatively low-quality heavy crude oil, and would be exhausted after around 25 years. The purpose of the Yasuni-ITT project by Raphael Correa's government, elected in 2006 and at that time still young and ambitious, was to prevent the future extraction of oil in the Ishpingo-Tambococha-Tiputini[8] (ITT) area of the Yasuni National Park in order to ensure the long-term preservation of the park's unique flora and fauna and prevent around 400 million tonnes of carbon emissions. In return, the international community, in particular the industrialised nations, were to provide compensation amounting to US$3.6 billion over a period of 20 years. The first milestone set by Correa was the goal of obtaining US$100 million from the potential contributors with no strings attached by the end of 2011. However, the government stated that this target was missed by around €30 million. The "publicity campaign" for the initiative was extended until 2013, with abysmal results. In total, just US$13.3 million were actually paid into the fund, with a further US$116 million pledged in the medium to long-term future (e.g. in the form of debt write-offs on the condition that the amounts were paid into the fund by the Ecuadorian government).

MAJOR REVERSAL IN THE CORREA GOVERNMENT'S ENERGY POLICY IN AUGUST 2013

In view of the long-term prospect of compensation payments amounting to US$3.6 billion by 2027 versus the expected income from oil extraction of US$18 million, in August 2013 the Correa government decided on a drastic reversal of its previous policy. On 15 August, President Correa announced to the world that the Yasuni-ITT initiative had failed, and that oil extraction would take place in this unique nature reserve after all. Correa's announcement of the initiative's failure was accompanied by a clear accusation directed at the international community, which he said was responsible for the decision given the low level of support offered to the initiative. This decision was met with disappointment and incomprehension on the part of practically all Ecuadorians, but in particular by large numbers of the president's loyal supporters, as they had always associated the Yasuni project with the government's commitment to a new social model

7 | Ibid.

8 | These are the names of three successful exploratory drillings in the east of the Yasuní National Park.

in which the protection of natural resources is of fundamental importance. One thing is certain: with this decision, Correa's left-wing government has forfeited its status as a beacon of environmental protection and lost a great deal of trust on the international stage. In the future, the Ecuadorian government's loud protests against the capitalist industrialised nations at climate conferences will lack a great deal of their former credibility.

In the wake of the Yasuni-ITT decision, the Correa government's position on alternative energy sources will also come under close scrutiny. The decisive question will be whether here too political necessities of a budgetary nature are allowed to hold sway.

GUATEMALA

Annette Schwarzbauer

On this year's Earth Day, which is celebrated in numerous countries on 22 April, the cartoonist from the Guatemalan daily newspaper Prensa Libre drew a gloomy-faced globe being cooked in a large pot over an open fire. To either side stand the leaders of India, China, the United States and Russia in a nonchalant pose for a selfie alongside the overheated planet, which is giving off small clouds of steam. No Europeans are to be seen around the fire; they are presumably busy elsewhere with damage control. The message is clear: Guatemala is aware of climate change and has a good idea of who is responsible.

In the general popular perception, there is no doubt as to the existence of climate change. The taxi driver grumbles that the rainy period is not nearly as clearly defined as it used to be, making the weather totally unpredictable. Citizens complain of the rising heat, saying that it never used to be such a problem. They perceive a trend towards longer dry and hot periods and more extreme rainfall.

There is some media coverage of the IPCC reports published in March and April 2014, but it is generally based on international press reports from news agencies. In addition to global consequences, such as the international tensions expected to result from water shortages caused by climate change, the impacts for Central America are also highlighted: water scarcity in semi-arid regions, floods in urban areas, declining food production and an increase in diseases spread by mosquitoes.

Various government bodies, research and consultancy institutions and environmental organisations are involved in efforts to combat the effects of climate change and also actively devising possible potential preventive measures in this field. However, a realistic assessment is that although these issues are being addressed, environment and climate are not considered a priority at the government level.

In December 2009, the National Climate Change Policy (Política Nacional de Cambio Climático) was published by the Ministry for Environment and Natural Resources. The policy covers the topics of education and training, technology transfer, risk management, reducing vulnerability, improving adaptation and reducing greenhouse gas emissions. In September 2013, Congress approved the framework law to regulate vulnerability reduction, obligatory adaptation to the effects of climate change and the mitigation of greenhouse gases (Ley Marco para regular la reducción de la vulnerabilidad, la adaptación obligatoria ante los efectos del cambio climático y la mitigación de gases de efecto invernadero). The law establishes the National Fund for Climate Change and the National Information System on Climate Change (both administered by the environment ministry) and the National Council for Climate Change (under the supervision of the country's president).

A number of initiatives have also been launched at regional and Central American level. Of particular significance was the presidential summit on climate change held in May 2008 in Honduras. The national presidents of the Central American Integration System (Sistema de Integración Centro-americana, SICA) allocated tasks to national and regional institutions. Under this initiative, the Economy of Climate Change in Central America project is being implemented by a number of regional institutions. One of the fruits of the summit is the Regional Strategy on Climate Change, which prescribes measures by government

bodies, the private sector and civil society in the fields of vulnerability and adaptation, mitigation, institutional development and training, awareness-raising and international efforts.

One component of the Guatemalan environment ministry's national policy on climate change is the reduction of greenhouse gas emissions. This is connected to the current efforts to expand the use of renewable energies and reduce dependency on fossil fuels.

With the 2013–27 energy policy, an update of the 2007 strategy, the Guatemalan Ministry for Energy and Mines plans to become a major electricity provider in Mesoamerica (Central America and Mexico). The aim is to develop the electricity supply while taking environmental aspects into account, and measures to reduce vulnerability towards climate change are also foreseen. The policy calls for diversification of electricity production, with the inclusion of renewable energies – the same approach as that of the environment ministry. The top priority of the planned package of energy policy measures is supplying the country with competitively-priced energy and cheap fuel, followed by extraction of the country's own oil reserves, energy-saving measures and reducing the consumption of firewood.

The impression is given that the expansion of renewable energies – the main focus is on hydropower, followed by solar and (to a lesser extent) wind energy – is not primarily due to climate change, but rather to the need to reduce dependency on oil imports and higher international prices for raw materials. At present, electricity is generated mainly from imported oil derivatives (almost 50 percent), with electricity from domestic hydropower plants taking second place (around 35 percent).

There is still plenty of potential for hydropower plants in Guatemala. However, plans for new plants repeatedly lead to social conflicts and protests on the part of local and indigenous communities. As a result, switching to hydropower is no straightforward task.

Meanwhile, Guatemala is still pursuing the goal of supplying all of the country's population with electricity. Of Guatemala's 15 million inhabitants, 2.5 million have no electricity connection. Firewood is still used extensively. Even in areas which are connected to the grid, some people continue to cook with wood fires.

There is sporadic awareness of the German energy transition in Guatemala. Some parts of society are familiar with Germany's increased reliance on renewable energy. This is viewed critically by the corporate sector in light of the higher prices brought about by the shift. However, Germany's know-how with regard to renewables is highly valued, in particular in the fields of wind energy and water management.

Guatemala is a signatory to the UNFCCC and the Kyoto Protocol. At the 2010 UN Climate Change Conference in Durban, South Africa, Guatemala was classified as one of the countries most in need of international support in dealing with the effects of climate change. It is also among the ten most vulnerable countries in the world. Accordingly, Guatemala regards itself as one of the countries most affected by climate change during negotiations on multilateral climate policy, and requests solidarity from the international community. Which brings us back to the beginning: it is others who are stoking the fire.

COLOMBIA

Hubert Gehring | Margarita Cuervo

CLIMATE CHANGE AND ENERGY SECURITY IN COLOMBIA: DEVELOPMENTS AND LIMITED PROGRESS

Introduction and overview

In the last ten years, Colombia has enjoyed significant economic progress. This has made it an attractive location for foreign investors and given the country favourable medium and long-term growth prospects. However, when it comes to sustainable development the country has significant challenges to overcome; climate change and energy security indisputably constitute two major problems for the region.

Although Colombia is responsible for a relatively insignificant share of greenhouse gas emissions – around 0.37 percent of the global total – it is one of the countries most affected by the consequences of climate change. According to the UNDP, Colombia is the greatest victim of extreme weather events in Latin America, and therefore urgently in need of appropriate political strategies to adapt and react to this situation. A clear example is the exceptionally heavy rainfall recorded from 2010 to 2011, causing floods and landslides, claiming 400 fatalities throughout the country and leaving around two million people homeless. As a result, the subject has become more prominent in various sectors of society.

Yet the debate over political measures and greater energy efficiency remains at a rudimentary stage. On the one hand, significant political guidelines for the development or renewables have been established, and there is great potential for the production of solar and wind power. On the other hand, however, production and consumption of renewable energies remains very low. In fact, the country remains heavily dependent on fossil fuels – in particular in the transport sector – and on large hydropower plants, which are in turn dependent on nature reserves and ecosystems, both of which are increasingly affected by climate change.

In light of the longer dry season in 2014, caused to a large extent by climate change, this issue is becoming more and more intimately connected to the need to formulate and implement an efficient energy policy. While Colombia has already taken its first steps towards greater energy security, it still has a long way to go.

Perception of climate change in Colombia: growing concern, limited knowledge

After science and research, politics is undoubtedly the sector in which the greatest progress can be observed in terms of the prominence of the issue of climate change. This is probably a result of the powerful socio-economic effects of the latest climate-related phenomena to occur in the country. Nevertheless, academics and entrepreneurs agree that the majority of counter-measures and plans are motivated by economic factors, and lack coordination.

A notable step by the government was the creation in 2011 of a Ministry for Environmental Protection and Sustainable Development (MADR),[1] with the aim of showing that it is possible to reconcile development in the field of the environment with sustainability. Since its creation, the ministry's investment budget has risen constantly. From 2013 to 2014 it rose by 44 percent, and currently totals around €122 million. Within the ministry, a climate change department is devoted to this specific issue. The national planning authority also stresses the need to draft a "national plan for adaptation to climate change"[2] to facilitate coordination of the relevant measures of the different ministries and public bodies. However, the reality is somewhat different, with a lack of coordination and clear formulation of the issues involved, especially in the provinces.

For its part, Congress has passed laws on mitigation of and adaptation to the effects of climate change. However, these laws are for the most part isolated initiatives undertaken by the government in response to current crises.

1 | This ministry was set up in 1993 and has since been repeatedly restructured. Under the government of Álvaro Uribe Vélez (2002–2006, 2006–2010) it was merged with the Ministry of Housing and Territorial Development. Environmental affairs were only combined with sustainability under the current government of Santos (2010–2014).

2 | "CONPES 3700. Consejo Nacional de Política Económica y Social", National Planning Authority Colombia, 2011.

The Tayrona National Park at the mouth of the Piedras River in eastern Colombia was established in 1969.

Local and provincial governments appear to be where awareness of climate change and its effects is highest. The provinces are more severely affected by the phenomenon than the capital city, and this gives the issue far greater resonance in political discussions and decisions. Nonetheless, the Konrad-Adenauer-Stiftung has observed, on the basis of academic and political surveys, that in the provinces discussions are ill-informed and competencies lacking in technical depth. In spite of first-hand experience of the effects of climate change, not much is known about its causes or appropriate measures for prevention.

Awareness of climate change has grown in the media, at both the provincial and national levels. Media coverage of the issue generally takes the form of reporting on current incidents, and is often of a sensationalist nature, which is not helpful in raising awareness in society. There is a need for more educational measures in this area. On the other hand, there are also some noteworthy awareness-raising initiatives[3] that suggest that the media are also interested in pursuing the subject further.

Among the population at large, knowledge and understanding of the subject is limited – mainly because Colombians[4] regard other problems as being more important, such as security, poverty reduction and the labour market situation. Armed conflict and high levels of violence in the country are also major issues, in relation to which environmental protection and climate change take second stage.[5]

The segment of the population most familiar with the issue of climate change is also the one most affected by it: the rural population in the provinces. Farmers in particular have suffered greatly at the hands of climate change.[6] Declining crop yields have boosted awareness of how the changes go beyond dry periods and floods, and pose a serious threat to the food supply. Surveys[7] in major cities and rural areas on the significance of environmental protection and climate change show that although these issues are not considered priorities, citizens do not approve of how local governments and authorities deal with the matters. In the nine largest cities, satisfaction with local authorities' approach to environmental protection is under 45 percent, with air pollution causing the most concern. With regard to climate change, in seven of the nine cities half of those questioned were certain that this natural phenomenon is exacerbated by human activity.[8]

Climate change and energy security: the debate is just beginning

Even though the subject of climate change is steadily gaining in importance among certain segments of Colombia's population, discussion and awareness of the issue of energy security and its relationship with the climate are restricted to highly specialised sectors of society. There is a wide gap separating mere discussion, or the passing of legal regulations, from actual implementation of concrete measures.

At the national level, energy policy and the issue of energy security are gaining in importance, primarily as a result of current circumstances. Since 2001, a law concerning the rational and efficient use of energy has been in place, intended to help mitigate the effects of climate change.[9] Within the government,

3 | E.g. projects like the radio programme *Planeta Caracol* and the special issue of the magazine *Semana Sostenible*.

4 | Cf. "Colombia Opina", *Revista Semana*, 09/2013, "La Gran Encuesta septiembre de 2013", RCN Noticias, http://noticiasrcn.com/nacional-pais/gran-encuesta-septiembre-2013 [31 July 2014].

5 | In a possible post-conflict situation (or better after the conclusion of peace negotiations with the guerrilla), climate change would probably move up the list of priorities, but Colombians undoubtedly face more pressing unsolved problems, such as social inclusion, regional integration, etc.

6 | Communiqué des SAC (Colombian farmers' association), rice growers' statement on falling yields.

7 | Cf. "Coparación de la percepión ciudana en 9 ciudades de Colombia 2011", *Red de Ciudades Cómo Vamos*, No. 6, 03/2011, http://medellincomovamos.org/file/1980/download/1980 [31 July 2014].

8 | Ibid.

9 | "Diario Oficial. Año CXXXVII. N. 44573", 5 October 2001, http://www.si3ea.gov.co/Portals/0/Conoce/ley697.pdf [28 July 2014].

most initiatives in this regard currently stem from the Ministry for Mines and Energy, for instance in the form of a plan to reduce greenhouse gas emissions in the energy sector. Since 2010, there has also been a programme for rational and efficient use of energy and non-conventional resources, initiated by the same ministry. It should be noted in this regard that for several years Colombia has been, alongside Brazil, the most active country in terms of producing biofuels as an alternative, low-emission form of energy generation.

To date, around 64 percent of the energy produced in Colombia is based on hydropower, which although abundant in the country is also severely affected by dry periods; only 37 percent of the country's needs are covered by fossil fuels. In light of steadily rising electricity prices worldwide and uncertainty about the future availability of water resources – reserves are starting to become scarce – there is a growing awareness among politicians and entrepreneurs of the need to either develop non-conventional energy sources or use coal to generate electricity.[10]

In the current electoral campaign for the 2014 presidential election, there is a lack of clear and innovative proposals on issues such as climate change or energy security on the part of candidates. Only in a single debate about the environment and water, organised by the WWF in conjunction with ISAGEN and the daily newspaper *El Espectador,* did the presidential candidates present some of their ideas on these matters. All of the candidates were in agreement that hydropower plants should remain the primary source of electricity, but that alternative energy sources should also be pursued in parallel.

THE INTERNATIONAL CONTEXT: MULTILATERAL ORGANISATIONS AND INTERNATIONAL CLIMATE DISCOURSE

Awareness of the state of international debates on energy policy and the international energy security situation is very limited in Colombia. The United Nations is the international organisation that people most associate with these issues. Other multilateral organisations such as the Inter-American Development Bank, the World Bank or the European Union have financed related initiatives and cooperated with government organisations in order to raise awareness and provide information on the subject.

In June 2012, Colombia played an important role at the Rio+20 Conference. At the country's initiative, the catalogue of targets for sustainable development was introduced into the declaration signed by over 190 countries. However, branches of Colombia's economy such as the mining and energy sectors, or agriculture – which have grown significantly in recent years and have been prioritised as engines of development – present major challenges in terms of environmental protection and risk prevention.

As far as multilateral negotiations according to UN guidelines are concerned, Colombia is actively engaged in the Ad Hoc Working Group on the Durban Platform for Enhanced Action under the UNFCCC (ADP). In terms of foreign policy, a priority for the country is the implementation of a convention to replace the Kyoto Protocol from 2020 that is legally binding for all UNFCCC member states. Colombia is a member of the UNFCCC, participating in negotiations, and from January to June 2014 it held the pro tempore presidency of the Independent Alliance of Latin America and the Caribbean (AILAC).

Thus the country has repeatedly highlighted the importance of a standardised methodology to evaluate the susceptibility of individual states to the effects of climate change, in order to enable the creation and implementation of National Adaptation Plans (NAP) that actually address the needs of each particular country and that can be used to measure the severity of the effects.[11]

The corporate sector has also made adjustments motivated by international discourse on climate change in recent years. Large enterprises in particular have started to monitor and publish their CO_2 and H2O footprints in accordance with UNEP and UNEP FI standards.

Little information is available in Colombia about European or German climate and energy policy outside of highly specialised technical or academic environments. In 2009, Colombia's congress approved the International Renewable Energy Agency (IRENA) statute. Colombia joined the agency in 2010 and in recent years has taken part in its general assemblies.

10 | Republic of Colombia, Ministry of Mining and Energy, *Plan Energético Nacional 2006–2025. Contexto y Estrategias*, Bogotá, 04/2007, http://www.upme.gov.co/Docs/PLAN_ENERGETICO_NACIONAL_2007.pdf [31 July 2014].

11 | Republic of Colombia, Ministry of Foreign Affairs, "Colombia en las negociaciones internationales. De cambio clímatico", 2014, http://bit.ly/1ACErId [31 July 2014].

CONCLUSION

Although some progress has been made of late in terms of awareness – more so with regard to climate change than to energy security – there is very little specialist knowledge on this topic in Colombian society at large outside of academia and government circles. A further cause for concern is the absence of any real awareness regarding the extent of the areas particularly affected by climate change, or regarding the close relationship between climate change and energy security. Despite the state's willingness to take appropriate action – at least on paper and in the form of legislation – the extent to which political ideas are actually implemented, or legal provisions transformed into concrete initiatives, is limited.

MEXICO

Janina Grimm-Huber

CLIMATE CHANGE AND MEXICO'S PARTICULAR VULNERABILITY

There is no question that Mexico is one of the world's most vulnerable countries as far as climate change is concerned.

In the last ten to fifteen years, the frequency and extent of abnormal heatwaves and unusually protracted droughts in the country have been remarkable. In 2011 and 2012 Mexico was afflicted by its worst drought in 70 years, which affected almost 90 percent of the country. Meanwhile, in the southeastern areas, the occurrence of heavy rainfall and hurricanes is on the rise, resulting in severe flooding. The panoply of extreme weather events and resulting consequences also includes freezing temperatures, large-scale forest fires and soil erosion. While the average number of hydrometeorological phenomena recorded in the 1970s was 300, by 2005 this figure had doubled, and by 2008 it had quadrupled to around 1,200 reported events. Many of these were classified as natural disasters with severe consequences for Mexico's population.

In other words, 1,385 municipalities in Mexico with a total of 27 million inhabitants have been directly affected by climate change in recent years – and the numbers are rising.[1] According to the national authority for disaster management, weather-related catastrophes in Mexico claim an average of almost 200 human lives per year.[2]

The damage has run into the billions. In 2005, Hurricanes Wilma, Stan and Emily caused damage amounting to almost MXN 45 billion.[3] In 2007, Hurricane Dean cost the Mexican state MXN 50.5 billion. When Hurricanes Alex, Karl and Matthew swept across Mexico in 2010, the damage came to around €5 billion, which combined with other natural catastrophes was equal to 0.8 percent of the country's GDP that year.[4] In addition, many thousands of Mexicans lost everything they owned.

Such extreme weather events are also the bane of agriculture and food production. According to IPCC estimates, the loss of farmland by 2050 will amount to between 13 and 27 percent. Mexico already imports a large portion of its food from the United States and other Latin American countries.

What is more, the negative consequences of climate change do not just affect the state, the economy and the population, but also the country's flora and fauna. Scientific studies show that the continuous rise in temperature is harming Mexico's biodiversity and tropical forests.[5]

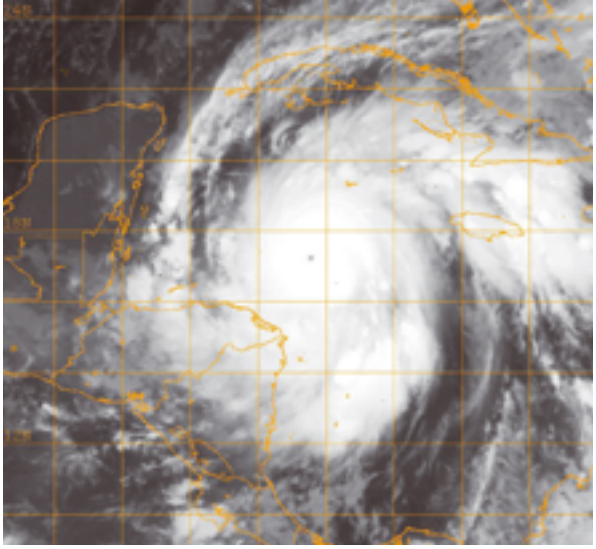
1 | Notimex, "México, en riesgo de desastres naturales por cambio climático", 29 July 2013, http://altonivel.com.mx/37239-mexico-en-riesgo-de-desastres-naturales-por-cambio-climatico.html [28 July 2014].

2 | CENAPRED, "Características e impacto socioeconómico de los principales desastres ocurridos en la República Mexicana. Ediciones 2001 a 2011. Serie Impacto socioeconómico de los desastres en México", 2013.

3 | Damage caused by natural disasters in 2010 amounted to 0.8 percent of national GDP. See: Angélica Enciso L., "Se agravará riesgo de la población ante desastres naturales por cambio climático", *La Jornada*, 04 / 2014, http://www.jornada.unam.mx/2014/04/07/sociedad/043n1soc [28 July 2014].

4 | Source: CENAPRED and Centro Mario Molina, 2013.

5 | Enciso L., n. 3.



Hurricane Wilma, the strongest tropical cyclone ever recorded, hit the Yucatán Peninsula on 21 October 2005.

EXTREME WEATHER A CAUSE FOR CONCERN

Awareness of the issue of climate change is high in Mexico, due in no small part to the extreme weather events and resulting consequences already outlined. This is reflected in various scientific studies and surveys conducted in recent years.

In 2012, the Journal of Peace Research published a study[6] measuring public perception of the issue of global warming, for which a total of 67,082 people from 47 countries were interviewed. Mexico ranked in the top tertile with a score of 3.58 (maximum: 4.0). Respondents with a high level of education between 30 and 60 years of age expressed the most concern. Little difference was observed between well-off respondents and those with a lower income. Nielsen, a well-known market research group, conducted a worldwide online survey in 2011 involving 25,000 consumers from 51 countries.[7] Although there was a general decline in interest in environmental issues from 2007 to 2009, 69 percent of those interviewed continued to express concern. Three countries in particular stood out in the survey: in Thailand, Portugal and Mexico 93 percent said that they found global warming alarming. A study by the Pew Research Center in 2013[8] concludes that in 39 countries around the globe, climate change is the number one fear for the future along with the international financial crisis. While Mexico is not among the top 5 Latin American countries, more Mexicans fear the effects of climate change than those of the financial crisis.

The results of national opinion polls are similar. Mexico's Centre for Social Studies and Public Opinion (CESOP), for instance, conducted a representative sample survey by telephone in late 2013 that showed that almost nine out of ten respondents (88 percent) had heard of global warming, and 87 percent of those regarded climate change as a credible threat to their country.[9] There is also widespread awareness of the problem of extreme weather in the country. The growing scarcity of water is a particular cause for concern. According to Mexico's Center for Research and National Security (CISEN), in 2001, 47.3 percent of the inhabitants of the country's northern states felt that they were experiencing an unusually prolonged drought. In 2006, 72 percent considered it possible that within ten years Mexico would no longer be able to meet its water consumption needs. Six years later, 68.1 percent voiced concern over the country's dwindling water supply.[10]

GREEN BEHAVIOUR IS STILL LACKING

Despite the alarm with which climate change and its effects are viewed, this is not enough to motivate average Mexicans to take an active part in addressing the problem. Environmentally conscious behaviour in everyday life is rarely encountered. In particular the wealthier classes continue to favour car travel, despite the hours spent on roads and in the eternal traffic jams of the major cities, to get from A to B – no matter how short the distance. Even the expansion of public transport options and the construction of additional cycle paths in city centres have so far had little impact on this trend. According to the Institute for Transport and Development Policy (ITDP), the number of cars on the road in Mexico is three times what it was just twenty years ago. In the Distrito Federal and the surrounding metropolitan area, for instance, 5.5 million vehicles are registered each year. Almost 22 million trips are recorded here every day.[11] It is therefore little wonder that the transport sector constitutes

6 | Berit Kvaløy, Henning Finseraas and Ola Listhaug, "The publics' concern for global warming: A cross-national study of 47 countries", *Journal of Peace Research* 49 (1), pp. 11–22.

7 | Nielsen, "Sustainable Efforts & Environmental Concerns Around the World", 2011.

8 | Pew Research Centre, Global Attitudes Project 2013, "Climate Change and Financial Instability Seen as Top Global Threats. Survey Report", 24 June 2013, http://pewglobal.org/2013/06/24/climate-change-and-financial-instability-seen-as-top-global-threats [28 July 2014].

9 | CESOP, *Cambio Climático y Medio Ambiente, En contexto* 40, 2013.

10 | For the sake of completeness, reference should be made here to a survey published in 2014 by the Ministry of Environment on the topic of "Climate change and public awareness", the results of which confirmed the trend indicated here: SEMARNAT, "Encuesta en Línea en el Marco de la Estrategia Nacional de Educación Ambiental para la Sustentabilidad", Mexico, 2014.

11 | ITDP, "La importancia de reducción del uso del automóvil en México. Tendencias de motorización, del uso del automóvil y de sus impactos", Mexico, 2012.

Mexico's second largest source of emissions. Subsidised cheap petrol, the expansion of inner-city high-speed roads (sometimes on multiple levels) and the provision of large, affordable car parks are major incentives.

Plastic and cellophane are everyday consumer goods for anyone living in Mexico. Every item purchased, no matter how small, is bagged in plastic as a matter of course. Mexico's favourite drink, Coca-Cola, is of course only available in plastic bottles or aluminium cans. Streets and parks are still treated as public rubbish dumps. Leftovers and plastic waste from commuters' daily breakfast are just as likely to be tossed out of the car window as kept and discarded in the nearest rubbish bin at the end of the journey.

Also noteworthy is the amount of water wasted in Mexico. On average, each Mexican uses between 320 and 360 litres of water per day.[12] Some 14 percent of the entire country's water consumption is used by private households. The largest user of water is the agricultural sector, with a 67 percent share of overall consumption. The fact that water – like electricity – is heavily subsidised is counter-productive when it comes to the economical use of this scarce resource. High distribution losses mean that 30 to 50 percent of the water – which is pumped huge distances – never even reaches the millions of inhabitants in Mexico's metropolitan regions. It is simply lost in transport.

Nevertheless, notable progress can be observed with regard to wastewater management, although Mexico has yet to reach European standards in this area. Thanks to the implementation of national water protection programmes and ambitious targets under the PAN presidents, Fox and Calderón, the proportion of urban wastewater being treated doubled between 2000 and 2011. Currently, almost half (46.5 percent) of urban wastewater is reused.[13]

12 | Figures vary depending on statistics and source.
13 | Industrial wastewater is not included here, BID, "Tratamiento de aguas residuales en México 2013"; CONAGUA, "Estadísticas del agua en México", 2011.

NATIONAL CLIMATE POLICY AS A CONSEQUENCE OF INTERNATIONAL OBLIGATIONS

In recent years, Mexico has made it very clear on the international stage that it is prepared to reduce emissions. Climate diplomats worldwide praised the resoluteness with which Mexico voluntarily subscribed to the ambitious reduction targets for 2050, becoming the first developing nation to do so. As host of the climate summit in Cancún, Mexico shone as an intermediary between industrialised and developing countries and committed to a 30 percent reduction relative to business-as-usual scenarios for 2020. While many countries argued at length about the targets to which they should agree to undertake a binding commitment at the Warsaw conference in 2013, massively weakening the road map to a climate treaty in the process, the Mexican delegates criticised their counterparts for lacking a sense of responsibility, highlighting that Mexico did not intend to wait for the 2020 results, but planned to constantly follow up its international commitments with actions. Mexico's interest in playing an internationally constructive role was evident again this year: both the negotiations of the member states of the GEF, a major international financing instrument for climate protection, and the Second World Summit of Legislators were hosted by Mexico in May and June respectively. The latter was attended by lawmakers from over 100 countries who came together to work out a common approach for the negotiation of a new climate protection treaty in Paris in 2015.

Mexico's commitment in the fight against climate change is not restricted to the international arena, but is also reflected in the country's internal policies. At the latest since the establishment of the inter-ministerial commission for climate change (Comisión Intersecretarial de Cambio Climático, CICC) in 2005, which coordinates the efforts of the various ministries with regard to climate issues, work on climate policy and institutional organisation has proceeded at full speed. The commission's first results came two years later with the approval of the National Climate Change Strategy (Estrategia Nacional de Cambio Climático, ENCC) and the National Development Plan (PND),which specifically addressed climate change for the first time. The plan calls for a 30 percent reduction in greenhouse gas emissions by 2020 and a 50 percent reduction by 2050. The Special Programme for Climate Change (Programa Especial de Cambio Climático, PECC) for the 2009–12 period was prepared on the basis of these strategies.

The General Law on Climate Change, which was enacted in 2012, constitutes the greatest achievement to emerge from the country's climate and environmental protection efforts. It outlines a road map for Mexico's climate protection policy for the next 40 years. In the wake of the two PAN governments, which made a major contribution to establishing and developing climate policy in Mexico, the country remains firmly on course. In June 2013, the PRI president, Enrique Peña Nieto, presented the country's second National Climate Strategy as part of the General Law. The strategy defines the main fields of action for cross-sector climate policy, adaptation to climate change and mitigation, and reaffirms Mexico's commitment to its ambitious climate protection targets.

In the course of these legislative innovations, specialised institutions have also been created. The most important of these are the Federal Ministry for Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT), the Federal Bureau of Environmental Protection (Procuraduría Federal de Protección al Ambiente, PROFEPA) and the national commissions for ecology, water (CONAGUA), forest management, biodiversity and nature reserves. The former are represented by regional offices in each federal state and are responsible for all areas under federal jurisdiction. Mexico's progress in the field of climate policy is also evident at state and municipal level: nine federal states now have their own commission for climate protection. Chiapas and Baja California have even begun work on their own climate protection act. Mexico City, Quintana Roo and Veracruz already have both.

MEXICO'S LATEST ENERGY REFORM: A GREAT DEAL OF FUSS, BUT NO PARADIGM SHIFT

These extensive climate protection regulations make Mexico an example for the rest of the world. It has made enormous progress.

Yet as long as the country continues to satisfy its growing energy needs primarily with fossil fuels, ratcheting up emission levels in the process, and the government fails to provide adequate support for renewable alternatives or incentives for more economic and efficient use of finite resources, partial success is the best that can be hoped for come 2020 and 2050.

The production and use of fossil fuels generate more than 60 percent of Mexico's total emissions.[14] The correlation between growing energy consumption and rising carbon emissions is amply demonstrated by statistics. According to data from the National Strategy for Energy Transition and Sustainable Energy Use, energy consumption grew by an average of 2.5 percent per year from 2001 and 2011. Meanwhile, greenhouse gas emissions rose by 1.8 percent.[15] This data shows that Mexico has succeeded in decoupling carbon emissions from energy consumption to a certain extent. However, this is due only in very small measure to the increased use of renewable energies – over the last decade the entire production of renewables barely exceeded the 8 percent mark – but rather to the gradual replacement of oil with natural gas. As a result, Mexico's energy matrix remains dependent on finite resources. The proportion of total primary and secondary energy generated from non-renewable sources in 2011 was 91.3 percent.[16]

In addition to the negative consequences for the environment and climate protection, unbridled use of these resources also poses a major threat to the country's security of energy supply. Since the Cantarell oil field in the Gulf of Mexico, at the time the country's largest, reached peak oil, there has been no escaping the fact that the end is in sight for easily accessible oil in Mexico. While the depths of the Gulf of Mexico do conceal large reserves, offshore extraction is highly complex and requires cutting-edge technology, which Mexico's only oil company, PEMEX, does not have. In light of this situation and the threat of a national energy crisis, in December 2013 a new energy reform was passed. The reform plans to open up the national energy sector to foreign investors in order to accomplish what Mexico's sole oil company cannot: drill the hard-to-reach deep sea oil and extract shale gas in the north of the country. Yet a paradigm shift in the sense of diversification of energy sources leading to greater expansion of renewables and reduction of fossil energies was not part of the reform.

Even so, the reform was welcomed by many experts, as it creates room for openness and liberalisation and aims to kick-start free trade in Mexico, bringing about a new economic order that replaces state intervention with the benefits of a free market economy. It would also create potential for positive developments in the

14 | SENER, "Estrategia nacional para la transición energética y el aprovechamiento sustentable de la energía", Mexico, 2012, p. 60.
15 | Ibid.
16 | Ibid.

electricity sector and the internal structure of PEMEX in particular.

However, this potential was practically ignored in the polemical and thematically one-sided media debate. In the months leading up to the reform, thousands of Mexicans responded to the call by left-wing opposition leader Andrés Manuel López for demonstrations against the government's plan. While López compared the reform of the energy sector to the loss of Texas

in 1836, calling Enrique Peña the new General Santa Anna,[17] chants of "The oil belongs to us!" could be heard from angry protesters and PRD supporters.

The question of whether the new regulations constitute a long-term guarantee of the country's energy security is discussed sporadically, if at all, in expert circles and political contexts that are barely accessible to the public. The only political force which is aware of this shortcoming and argues for greater diversification of energy sources, energy efficiency and environmental protection is the Christian democrat party Acción Nacional, which has announced a commitment to a greater involvement of these issues in the negotiations surrounding the "secondary laws". Whether or not they are successful will become clear in a few weeks, when the second round of negotiations is concluded.

17 | Antonio López de Santa Anna was a Mexican general and politician. He lost Texas and went down in history as a national traitor.

PANAMA

Jeffrey Calderon | Henning Suhr

In May 2013, Panama experienced its most severe energy crisis to date. The water level in reservoirs fell to historic lows, resulting in hydropower plants receiving an insufficient supply of water. Around 50 percent of Panama's electricity is generated from renewables, with hydropower playing a particularly important role. The crisis led to a series of blackouts and government-ordered restrictions, even though the lack of rainfall had made the likelihood of a power shortage apparent. Industry, agriculture and business all suffered losses. Electricity rationing became necessary again in 2014. However, as electricity consumption measures were initiated earlier than in the previous year, the worst was avoided. Even so, the problems of energy shortage and lack of energy security remain. The total economic losses caused by electricity rationing during this year's crisis are estimated at US$30 to US$42 million.

Although Panama has just 3.5 million inhabitants, it is a country of contrasts. On the one hand, it has enjoyed above-average growth for years, and is in statistical terms a middle-income country. On the other hand, in addition to serious social issues, it is faced with major environmental problems such as forest and soil degradation, declining biodiversity, water pollution and the consequences of poor urban planning, for instance with regard to waste disposal. Around two thirds of the population live in urban areas.

Various studies show that developing countries, in particular those located close to the equator, will be more seriously affected by climate change than other countries and regions.[1] Like other countries on the isthmus, Panama is increasingly feeling the effects of climate change. Rainfall in the rainy season is becoming more intense, causing landslides and flooding. The capital, Panama City, is especially affected. Estimates indicate that around 650 floods and 250 landslides occurred between 1990 and 2004, which in addition to causing damage to the environment, property and infrastructure also claimed human lives. This has made the Panamanian authorities very much aware of the problems caused by climate change.

It is estimated that by the year 2100 the damages, mainly to the agriculture and livestock industry, could amount to 18 to 19 percent of GDP.[2] Accordingly, the

1 | Robert Mendelsohn, Ariel Dinar and Apurva Sanghi, *The effect of Development on the Climate Sensitivity of Agriculture, Environment and Development Economics*, 2011, pp. 85–101.

2 | Diana Ramírez, Juan Luis Ordaz, Jorge Mora, Alicia Acosta and Braulio Serna, "Panamá: Efectos del Cambio

national environmental authority ANAM (Autoridad Nacional del Ambiente) has taken a number of steps to mitigate the negative impact of climate change on biodiversity and the quality of water, air and soil, and improve environmental management. Yet the country's most pressing environmental problems and challenges remain unresolved, such as forest and soil degradation, the extinction of certain animal and plant species, and the expansion of renewable energies. A comparison of ANAM's environmental reports for 2006 and 2011 reveals an increase in nature reserves, a reduction in greenhouse gas emissions and improvements in terms of environmental management. The National Climate Change Programme (Programa Nacional de Cambio Climático, PNCC) was instituted, combining the efforts of environmental and other civil society groups with those of the government. In the past, the country has devoted relatively little attention to environmental concerns.

Panama's electricity generation capacity is 1,426 megawatts, and is mostly based on hydropower and conventional thermal energy. The dependency on hydropower, which is subject to climate fluctuations, means that the country does not have a secure electricity supply. In 2013, 90 percent of the electricity generated was consumed by industry and business.

The threat of economic losses has boosted interest in wind and solar energy in recent years. Although late, a number of ambitious projects have been initiated in this regard. For instance, Central America's largest wind farm, near the provincial capital Penemoné, is scheduled to go online in mid-2014. The investment, worth US$440 million, will cover around six to seven percent of Panama's entire electricity needs. Its 110 90-metre-high turbines will produce twice as much as those in Honduras, Nicaragua and Costa Rica. The wind farm belongs to the Panamanian Wind Union (Unión Eólica Panameña, UEP), which is steadily increasing its capacity. For instance, Panama's first solar farm was inaugurated in Herrera, in the country's central southern region, in February 2014. The project was executed by Italian company ENEL Green Power and financed by the Italian government. A second construction phase is planned, which will double the farm's capacity from 2.4 to 4.8 megawatts.

Germany's KfW Development Bank is also actively engaged in the electricity sector, financing grid connection in Central American countries with loans amounting to US$65 million provided through the Central American Bank for Economic Integration (Banco Centroamericano de Integración Económica, BCIE). Connecting the national grids is intended to improve security of supply. At the Central American level, under the cooperation in place between the BCIE, KfW and Germany's Federal Ministry for Economic Cooperation and Development (BMZ), renewable energy and energy efficiency projects have been financed to the tune of US$280 million. Panama has a relatively high afforestation potential for carbon sequestration. According to a study conducted in 2003,[3] Panama has more than 1.5 million hectares classified as "Kyoto Area", which means they are suitable for reforestation.

Former pastures are being reforested as diverse mixed forests that include native tree species such as the amarillo.

AN ENVIRONMENT MINISTRY FOR PANAMA?

In some areas, Panama is a frontrunner. It possesses the world's second-largest free trade area, a globally important shipping canal, the world's largest shipping register, a highly developed banking and financial services sector, and one of the biggest airports in Latin America. However, in spite of the country's high degree of development, it also suffers from a number of shortcomings: Panama is the only country in Latin America without an environment ministry. The fact that this function is performed by ANAM, and only partially at that, demonstrates just how little importance is given to environmental concerns. A ministry normally gives important and substantial impetus to a green agenda and this is lacking. A study by the Instituto Ciudadano in 2014 and commissioned by the Konrad-Adenauer-Stiftung examined environmental

Climático sobre la Agricultura", CEPAL, 01 / 2010.

3 | FAO, *Panamá – Frente al Cambio Climático*, Serie Centroamericana de Bosques y Cambio Climático, 2003, http://fao.org/climatechange/61880/es [31 July 2014].

awareness and the perceived importance of renewable energies on the part of the Panamanian population, as well as its opinion on political engagement with regard to environmental policy. Some 93 percent of respondents stated that environmental protection is an important or very important issue for the future government, which will hold office from 2014 to 2019. Furthermore, around three-quarters of those surveyed declared themselves in favour of the creation of an environment ministry, contradicting the assumption propagated by leading political and social figures that the majority of the population does not want a ministry instead of ANAM. The hope remains that the new government will respond to the population's wish with actions. So far, Panama has had no environment minister to represent it at international climate conferences.

PERU

Pedro Gamio Aita

PERU AND CLIMATE CHANGE

The Peruvian state is called upon to promote sustainable development founded on the interaction and balance between economic efficiency, social justice and environmental protection, with the goal of improving quality of life by means of responsible and sustainable management of natural resources. In Peru's constitution, protection of the individual and respect for human dignity are enshrined as the ultimate goals of society and the state, guaranteeing every person the right to "peace, tranquillity, enjoyment of leisure time and to rest, as well as to a balanced and appropriate environment for the development of his life".

Evidence of Peru's precarious environmental situation[1] can be found every day, anywhere in the country – a situation that is exacerbated by extreme poverty and pollution. Added to this are the effects of global warming.[2] The paradox lies in the fact that while Peru causes the same quantity of greenhouse gas emissions as Denmark or New Zealand, its income only amounts to between a fifth and a quarter respectively of that produced by these countries. Peru is therefore faced with a major challenge. A society that wishes to achieve greater development must understand its environment and the physical, natural, cultural and social resources at its disposal. Accordingly, strategic planning of social and ecological aspects of economic activity is indispensable. Yet medium and long-term thinking is in short supply in Peru, while the public education system suffers from a lack of funding. Moreover, state policy elements are not interlinked in such a way as to favour sustainable development. Ecological institutionalism is closely related to ecological literacy, as well as to knowledge about best practices for interacting with nature, about the production of goods and the provision of services, and about the main challenges in the field of technology. If the population is not educated, and therefore not equipped to develop the capacity for sustainable resource management, the cost of climate change in the country could turn out to be much higher than previously assumed. Only the very highest degree of institutionalism and high-quality institutions will enable the country to implement an appropriate strategy for mitigation of the effects of climate change and the necessary adaptation. Ultimately, social conflicts arising as a result of the decline in quality of life pose a threat to governability. Accordingly, it is indispensable to reinforce the institutional and ecological empowerment of the country as part of a process of decentralisation and modernisation of the state. This process should be understood as economic and technological processes for the development of local and regional capacities, and not just as the creation of political bodies or as a means of gaining a higher budget. This in turn must be accompanied by the creation of systems for accountability and monitoring of the implementation of environmental regulations.

At the same time, mechanisms for public participation in the entire sphere of state administration must be reinforced. It is also important to strengthen environmental management so as to increase competitiveness, especially in terms of cleaner and more susta-

1 | According to the World Bank's CDF, environmental pollution causes damages amounting to 2.9 percent of the country's GDP.

2 | Everything depends on the decisions of the international community and the specifics of the long awaited agreement to reduce emissions to slow down the increase of global temperatures and ensure that it does not exceed two degrees Celsius. In this context, Peru could suffer damages totalling 4 to 20 percent of its GDP.

inable production processes, while constantly taking into account the ecological footprint of the economic activities. We must aim to utilise the competitive advantages of biodiversity and the characteristics of our national territory. We must create and maintain an inventory of our natural and renewable resources, our traditional knowledge and environmental services, and value these elements. We must form strategic bonds between state, science and business. We need to stimulate competition and the creation of scientific and technological competencies so as to be equipped to face the risks, problems, tensions and conflicts caused by environmental destruction and climate change, as well as any resulting hazards to health, the environment and biodiversity.

Peru's national environmental policy is of a cross-cutting nature, pertaining to all productive and extractive sectors, the educational system and national security. The country's governability and thus its ecological security (the extent to which a system is equipped to deal with the damaging effects of climate change) depend on a strengthening of institutionalism. Instruments to be employed in this regard include strategic environmental assessments, economic and ecological development planning, ecological land use planning and environmental impact studies; these should all be part of an ecosystemic approach.

In short, faced with heavy pollution and the growing destruction of the country's ecosystems, shortcomings in terms of governability and the influence wielded by the country's institutions are hampering an appropriate response and efficient management. The costs of environmental damage are estimated to have equalled 3.9 percent of GDP in 2003 (MUNDIAL, May 2007). This damage affects both urban and rural areas, which suffer primarily from water pollution, indoor and outdoor air pollution, natural catastrophes, declining soil quality, deforestation and accumulation of waste.

Added to this are the effects of climate change, estimated to cause losses amounting to 4.5 percent of GDP in 2005 (Andina, 2008). Although Peru is responsible for just 0.4 percent of global greenhouse gas emissions, it is among the countries most susceptible to the effects of climate change worldwide. Observations show that the country's glaciers have receded by 22 percent over the last 30 years, which will have a negative impact on the drinking water supply in the future. Climate scenario models show that the El Niño phenomenon will grow in intensity and frequency. Dry periods and freezing temperatures in river areas, which play a key part in the country's food production, have become more frequent.

If we ignore the need for efforts to mitigate the impact of climate change and concentrate only on adapting to climate change and compensating for its effects, there is a risk that in the long term these effects will grow to such a scale that it will no longer be possible to control them despite adaptation measures and mitigation scenarios. What is more, those most affected by these problems are the poorest segments of society, thus leading to increased social conflict.

A mitigation strategy must also take into account local benefits and synergies tied to economic growth, management of renewable and non-renewable resources, effects on local environmental quality, adaptation policy and changes to climate protection regulations.

Climate change will also continue to affect agriculture, biodiversity and the availability of water, which are ultimately connected with the issue of energy. Other expected consequences include the disappearance of the tropical glaciers in the Andes below an altitude of 5,000 metres, a certain degree of desertification in the Amazon region, low crop yields, floods in coastal areas caused by the rising sea level, higher occurrence of tropical diseases, disruptions to the water cycle and increasingly extreme weather events. It is estimated that measures to mitigate the economic effects of climate change will cost the region between US$17 and US$27 billion per year.

Meanwhile, there are also examples of how economic growth can be decoupled from greenhouse gas emissions in Latin America, as there are numerous growth models which do not involve excessive carbon emissions.

There are many ideas, as well as initiatives already under way, such as the introduction of carbon indicators in the stock exchange as an initiative to promote investment in renewable energies and to expand forestry. Others include the creation of environmental protection legislation, personnel training for the development of measures to reduce carbon emissions, incentives and energy regulations, and NAMAs. Equally important in this regard was the successful execution of the UN Climate Change Conference (COP20).

Peru submitted three targets to the UN as voluntary commitments: increasing the share of renewable energies in the energy matrix to 40 percent by 2021, reducing net emissions to zero in the category land use and forestry, and capturing and using methane gas through proper urban waste disposal. Measures to

achieve these objectives have already been adopted; however, slow implementation due to the low political priority given to these issues raises concerns about whether Peru will be able to stick to its plan. There is a danger that this will drive the economic costs caused by climate change even higher.

VENEZUELA

Henning Suhr

Venezuela signed the UNFCCC in 1994, and the Kyoto Protocol in 2004 (the latter did not enter into force until 2005). Nevertheless, the country is – in proportional terms – Latin America's greatest emitter of CO_2. According to data from the World Bank, per capita emissions of CO_2 totalled around seven tonnes in 2010, while in neighbouring Chile and Argentina this figure was only around four tonnes.[1] Venezuela is responsible for 0.56 percent of global carbon emissions.

Venezuela's plentiful supply of energetic resources has resulted in a feeling of entitlement on the part of both the government and the population to consume unlimited amounts of oil, gas and electricity at low prices. The market is subject to a range of distortions that evolved over time as a result of subsidies and price controls leading to higher consumption levels and offering no incentive for energy efficiency or savings. The result is an above-average energy consumption compared to other countries in Latin America and the rest of the world. What is more, environmental protection and sustainability have so far been considered to be of secondary importance in political terms. Major shortcomings can be particularly observed in areas such as waste disposal or wastewater treatment.

While climate change and environmental protection are intensively discussed in Venezuela, the debate is largely restricted to specialist circles. Numerous academics and other experts and a range of academic departments and courses are devoted to the topic. Issues such as climate or environmental protection are frequently covered by the media. However, there are very few civil society groups that approach the issue in such a way as to be able to exercise any political influence. The political sphere itself does very little to put climate change on the public agenda, although this is also due to the current political situation, which is characterised by repression, violence, economic crisis and increasing disorder.

The policies announced by the Venezuelan government frequently differ from those it actually initiates and executes, and it often does not involve civil society groups or experts that do not completely share the government's views. This is also the case with regard to environmental and climate protection. Not long ago, well-known politicians spoke out in favour of environmental concerns, but due to the ongoing political crisis the topic has practically no resonance in the political debate. Environmental and climate protection are not widespread concerns, and the population has only a limited knowledge of the issues, which does not in any way alter everyday behaviour (e. g. increased recycling) or result in political demands. The issue of sustainability has virtually no influence on the Venezuelan people's consumer behaviour, nor is it given priority in policy making.

Nonetheless, climate and environmental protection could become more prominent in the future. The government's National Plan 2013–19 (Plan de la Patria 2013–19) establishes, in Target 4, "the need to establish an eco-socialist [sic!] economic model based on a harmonious relationship between people and nature that guarantees optimal and rational use of and benefit from natural resources and respects natural processes and cycles". Whether and, more importantly, how this target will be implemented in terms of government policy remains to be seen. So far, it simply appears that the Chavista government has once again co-opted an issue for propaganda purposes. Accordingly, concrete results with regard to climate protection are unlikely. In late May 2014 the implementation of the eco-socialist model was announced, without any definition of the term's actual meaning.

1 | The World Bank, "World Development Indicators: Energy dependency, efficiency and carbon dioxide emissions", 2013, http://wdi.worldbank.org/table/3.8 [28 July 2014].

President Maduro announced the formation of a climate change commission, but failed to specify which tasks would fall within the body's remit. Although universities, scientists and environmental movements were invited to take part in the commission, its actual composition is likely to be dependent on the participants' political convictions. Venezuela has also prepared proposals regarding the "protection of the planet", to be presented to the United Nations in September. "In order for the earth to be saved it is necessary to create awareness, to move the awareness of millions, to stop being passive victims of the damage caused by world's industrial capitalism and start being actors of change, protagonists of a technological, economic transition," was the somewhat nebulous description of the country's position by its head of state in a speech at a ceremony in a military barracks to mark the occasion of the "day of the tree".

In the meantime, the Venezuelan reality is rather different, contrasting heavily with the president's words. Alicia Villamizar, a professor at the Faculty for Environment Studies of the Simón Bolívar University in Caracas and the only Venezuelan expert to have contributed to the IPCC's Fifth Assessment Report, gave a damning testimonial of the Chavista government's efforts towards prevention of and adaptation to climate change. For instance, according to Villamizar, protection of the roughly 4,000-kilometre coastline has been neglected, Venezuela's vehicle fleet has barely been renewed in 15 years and the oil industry operates with practically no environmental constraints.

Venezuela's environment and climate policy is rife with contradictions, such as the subsidies granted to petrol. Premium-grade petrol currently costs around €0.014 per litre. Nowhere in the world is petrol as cheap as in Venezuela – and the same can be assumed for the amount of petrol wasted. In conjunction with the lack of public security, the inadequate public transport system and the tropical climate, the petrol price policy results in private cars being indispensable to many Venezuelans. However, there are no incentives to avoid unnecessary travel, adopt fuel-efficient driving habits or even increase car occupancy rates over long distances. The resulting traffic jams make the misguided petrol price policy even more counter-productive: as well as harming the environment, it results in high costs to the state. Specialists from an environmental expert group of the Konrad-Adenauer-Stiftung in Venezuela used official data to calculate that the petrol price would have to be at least €0.17 per litre to cover production costs. The resulting losses are estimated at around seven percent of GDP. This is not the only case of economic and climate policy madness in Venezuela's government. Increasing deforestation is causing considerable soil degradation. This alarming development is accompanied by inadequate water conservation and water scarcity, which has a negative impact on ecosystems and hydropower electricity production. In many locations, electricity shortages are compensated for using generators, which drives down the carbon balance. In a centralised state, responsibility for energy and environmental policy lies in the hands of the national government. Municipalities and provinces wield little influence. The government's intention to promote the development of renewable energies has so far been manifested only in the form of minor wind farm projects in the Falcón province.

Almost every year in Venezuela, prolonged rainfall is followed by heavy flooding in December. The Caracas region is the most affected, due to its position on the Guaire River.

The Venezuelan government does not deny the phenomenon of climate change and its effects – however, nor does it take appropriate political action. On the international stage, the country takes the ideological view that the world's wealthier countries bear greater responsibility for climate change than the poorer nations, but are seeking to pass on this responsibility to the latter by means of international agreements, while also claiming that the wealthy nations are denying developing and emerging countries the funds they need to take the necessary mitigation measures. It calls upon the industrialised nations to abandon the "blockade" of compensation payments for the negative effects on the climate they have caused.[2]

2 | Venezuelan representative's speech at the UN Climate Change Conference in Warsaw: "Venezuela fijó posición en convención de la ONU sobre cambio climático", *TeleSUR*, via Aporrea, 22 November 2013, http://aporrea.org/internacionales/n240398.html [28 July 2014].

As long as the Venezuelan government stands by this ideologically embellished interpretation, there is little prospect of any changes to its stance towards international climate policy. In light of its critique of the current state of affairs, it would be fitting if Venezuela were to distinguish itself as a model of climate policy for other countries, rather than as a negative example.

CLOSING REMARKS

CLOSING REMARKS

Christian Hübner

Overall, the most noticeable aspect of national perceptions of global climate change – whether among policy makers, the public, or in the media – is that they are highly fragmented and are becoming ever more so. For instance, in regions that have to contend with the effects of climate change, such as water shortages and rising sea levels, public awareness of the issues is on the rise. In developing and newly industrialised countries in particular, this process is closely linked to the debate on the issue of fairness, which addresses the industrialised world's responsibility for climate change and calls for appropriate compensation. In spite of that, there are many developing countries where climate change is still not a topic of public debate. For people in those countries, poverty, food, energy security and economic development are much more important issues. It is, however, also apparent that governments in developing and newly industrialised countries do have climate protection and adaptation strategies – but they often either fail to implement them effectively or do not get them off the paper. One reason for this ambivalence could lie in the increase in development cooperation motivated by climate change, which provides financial stimulus at a higher political level via bilateral initiatives and, perhaps to a greater degree, via multilateral organisations like the European Union and, on a larger scale, the United Nations. Furthermore, it is clear that political parties in developing countries are increasingly addressing issues related to climate change by offering the electorate relevant proposals in their manifestos. This is an encouraging development that should be further promoted.

In terms of perceptions of climate change by world region, we can see a rough trend emerging. The political perception of climate change in Europe and other industrialised countries such as Canada, South Korea and Japan is slowly declining as a result of the economic and financial crisis and current discussions on energy security. Meanwhile, in other industrialised countries such as the United States, in newly industrialised countries like China and in many developing countries, the trend appears to be going in entirely the opposite direction. These countries are experiencing such a surge in environmental problems that policy makers have adopted comprehensive measures for protecting the climate and the environment and are calling for more commitment at the international level.

A particularly noticeable trend – which developed over the past few years in the shadow of global climate policy but has now become an integral part of the public debate – concerns the fundamental question of how we can meet the rising global demand for energy. The matter raises issues of regulatory policy and how it should limit the global hunger for energy in a way that is climate friendly and conducive to economic growth. However, it is also increasingly a matter of fundamental foreign and security policy challenges that are now situated in the context of energy and climate policy. These days, the global hunger for energy is being expressed, both politically and economically, through Asia. The continent's growing demand for energy as well as other resources is changing the global structures of geopolitical influence. Asian energy consumers such as China are becoming increasingly active and are making their influence felt in the Near and Middle East. At the same time, innovations like fracking to extract shale gas and oil in the US and the overall increase in energy efficiency in developed countries are changing the existing supply and demand structures for energy resources. This is also changing the geopolitical situation in terms of energy supply routes. By causing a decline in ice masses in the north, climate change has opened up new maritime routes and created scope for exploiting additional reserves of energy resources. On the technology side, advances in liquefying natural gas have made it possible to transport gas by sea, which is giving rise to alternatives to pipeline projects that are expensive and often politically complex.

Looking at the developments in climate and energy policy in recent years and at the way they are perceived in the individual countries, it is clear that renewable energies are becoming increasingly important everywhere. Their advantage over fossil fuels lies in them being largely climate neutral. However, they are also more expensive than fossil fuels and not as reliable when it comes to ease of storage. New exploitation of fossil resources, such as shale gas, also stands in direct competition to renewables. Recent years have shown that more and more countries are adopting their own energy strategies and a less dogmatic approach. Their reasons for doing this are rarely motivated by concerns for the climate. Rather, the decisions are often determined by traditional considerations of energy security in terms of cost effectiveness and security of supply. But even from this perspective, renewable energies are considered real options for complementing existing energy

supply systems. Countries such as Germany that are pursuing an energy transition designed to help them switch to a system based almost exclusively on renewables are being very closely observed by others who hope to profit from their learning curves. Interestingly, Germany's energy transition is not largely perceived as being motivated by concerns about climate change. Instead, the policy is understood as a logical consequence of the lack of deposits of energy resources on its own territory. Irrespective of where it happens in the world, the integration of renewables has produced, essentially, the same question: how can fossil fuels and renewable energies, which are still heavily dependent on national support schemes, simultaneously secure energy supply via a common energy market? Since energy systems differ widely from one country to the next, no definitive answer to that question exists. However, with everyone asking the same question, we are definitely seeing the whole world move towards an energy supply based on more renewable energies.

UN climate talks have been going through a difficult phase for a long time now. As far back as the Copenhagen Conference in 2009, a long-term negotiation road map was supposed to lead to a comprehensive and binding climate deal. In the end, diverging opinions meant that the deal never materialised. The new road map is now due to lead to a global deal in Paris in 2015. The UN secretary-general has even stepped in, inviting heads of state and government to New York this September to discuss the current climate negotiations. It is hard to quantify the probability of a deal being reached. However, experience from past talks has shown that deals can fall apart on the fundamental hurdles that still emerge when politicians weigh up climate protection, economic growth and security of energy supply. It remains to be seen whether or not this can be counteracted by the extremely impressive plans – such as the US $100 billion that industrialised countries are due to start providing to developing countries from 2020 – that set out a redistribution of funds for mitigating or adapting to climate change. Perhaps, however, now is precisely the time to start exploring, in parallel to the multilateral talks, new pathways for effectively tackling climate change. Current trends at the national and regional levels – such as the increasing use of renewable energies, climate policies in cities and emissions trading schemes – could serve as examples in this regard.

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