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# Decarbonising the Economy of North Macedonia

Author: Pavlina Zdraveva

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# Impressum

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**Author:** Pavlina Zdraveva

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# Abstract

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The war in Ukraine changed the geostrategic influence on the energy markets in the world, manifested mainly through the changes in the price of energy fuels and electricity and took toll of the low-carbon transition plans. Soaring energy prices have prompted governments to rethink their energy policies. Many countries – including North Macedonia – are considering ramping up fossil fuels as part of their response, but increasing fossil fuels would put the 1.5 degrees Celsius target beyond reach.

Since October 2021, North Macedonia, forced by the sharp incline of the energy prices on the market delayed the closure of the coal-based power plants to support the energy security of the country. The energy crisis forced the North Macedonia's Government to provide budgetary support to the energy companies, amounting 760.2 million euros so far.

A systematic literature review has been undertaken, followed by an in-depth analysis to ascertain the extent to which the new global energy paradigm will influence the main strategic energy-related objectives of the country. The results show deviation from the decarbonisation path and the planned measures, as well as possible changes in the investment cost scenarios. Based on this analysis, three key policy recommendations are provided to get back on the decarbonisation pathway.

The current unprecedented energy crises in Europe may be the main driver for the devaluation of the national economies, resulting with economic inflations. However, it presents a possibility for investment in renewable technologies and especially energy efficiency, therefore contributing to a sustainable green transition for North Macedonia.

# Introduction

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The United Nations Framework Convention on Climate Change and its Paris Agreement<sup>1</sup> urge countries<sup>2</sup> to take ambitious climate actions in order to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible, to have competitive zero-carbon solutions in sectors representing over 70% of global emissions (energy production and usage, industrial processes etc.) by 2030 and to achieve a climate neutral world by mid-century [UNFCCC].

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a 5- year cycle of increasingly ambitious climate action carried out by countries, stipulated in their officially submitted plans for climate action known as nationally determined contributions (NDCs).

Climate action is at the heart of the EU policies, in line with their commitment for climate action under the Paris Agreement. By 2050, Europe aims to become the world's first climate-neutral continent by adopting the European Green Deal, an ambitious package of measures ranging from cutting greenhouse gas emissions, to investing in cutting-edge research and innovation [European Commission].

North Macedonia has dual responsibilities when it comes to climate change. Despite having status of developing country under the UNFCCC (meaning no mandatory greenhouse gas emission targets), as a candidate member state to the EU, North Macedonia has to adhere to EU Climate and Energy policies, which assume the obligations of the UNFCCC developed countries to cut down emissions. Further, the country is also a Contracting Party of the Energy Community, which is rapidly advancing the implementation of EU regulations for monitoring, reporting and verifying greenhouse gases, and is taking steps to tackle the climate crisis.

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<sup>1</sup> First climate change legally binding agreement, adopted in 2015.

<sup>2</sup> 196 Countries adopted the Paris Agreement.

Therefore, it is not surprising that main drivers for advancing the climate agenda in the country are:

- The European Union's 2030 Climate and Energy Framework,
- The European strategic long-term vision for achieving climate neutrality by 2050,
- Membership in the European Community, as well as
- the obligations that the country has with the ratification of United Nations Convention on Climate Change (UNFCCC) and the Paris Agreement.

North Macedonia's climate policies are ambitious and based on sound scientific research. Energy and Climate policies are fully aligned, as more than 70% of the North Macedonia's GHG emissions derive from the energy sector (75% in 2019). Emissions from natural gas used for electricity and heat production accounts from 4-5% in the total greenhouse gas emissions. Decarbonisation is one of the main pillars of the national Strategy for Energy Development until 2040, the National Energy and Climate Plan (NECP), the Long Term Strategy for Climate Action and the enhanced Nationally Determined Contributions on Climate Change (NDC), all adopted in the last couple of years. The country' dependence of natural gas imports, as well as for most of the fuels, makes the decarbonisation scenario significantly vulnerable to the turmoil in the markets for coal, oil, natural gas, and electricity, triggered by Russia's invasion of Ukraine.

There is strong focus on regional decarbonisation/green growth and investments. Regional co-operation and action through the Green Agenda for the Western Balkans (Sofia Declaration) enable the countries of the Balkan region to jointly identify more effective solutions to problems or to make better use of their common potential (reforming energy and transport sectors, introducing carbon pricing instruments and market-based renewables support schemes, as well as phasing out coal subsidies).

The Covid-19 pandemic took its toll on human life's (9,337 confirmed deaths in North Macedonia<sup>ii</sup>), and cumulative output losses (estimated at 3.7 billion USD for 2020 and 2021 for North Macedonia<sup>iii</sup>). The invasion of Ukraine cut the recovery short and amplified inflationary pressures, adding to large cumulative losses in output since the onset of the pandemic. The corporate sector faced declining revenues and deteriorating profitability, with services and microenterprises being the most affected. Consumer price inflation surged to 16.8 percent in August 2022, with food and energy prices rising by more than 20 percent. As a result, the North Macedonia's GDP has reduced to 2.1% in 2022 [World Bank] and fiscal deficit accounts of 55,4% of GDP in 2022 [Ministry of Finance].

**Climate change** adverse impacts on North Macedonia are significant (with some regions more vulnerable than others) and **primarily depend on the level of GHG emissions**. Since 2000, climate extremes became "business as usual" in North Macedonia and drain public funds for dealing with consequences. Floods and heat waves take their toll on casualties and economic losses (app. 97,3 mil EUR), while the wild fires turned forestry to GHG emitter rather than sink and caused 179,15 mil EUR damage just in the last five years.

This trend is going to spill over in the future. The results of country specific scenarios related to temperature, precipitation and climate extremes showcase that citizens of North Macedonia will experience reduced cold extremes, but will face hotter and drier climate in the future, further stretching the energy sector to meet the cooling demand.



# North Macedonia's Climate Change Profile at a glance

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## VISION 2030

*Enhanced Nationally Determined Contributions to Climate Change*

In 2030, 82% reduction of net greenhouse gas emissions compared to 1990 levels.

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## VISION 2050

*Long-Term Strategy on Climate Action*

**“Republic of North Macedonia is, by 2050, a prosperous, low carbon economy, following sustainable and climate resilient development pathways, enhancing competitiveness and promoting social cohesion through action to combat climate change and its impacts.”**

North Macedonia's greenhouse gas (GHG) emissions reached **12,902 Gg CO<sub>2</sub>-eq in 2019** or **6.13 t CO<sub>2</sub>-eq per capita**.

Climate strategic documents present clear and ambitious **long-term vision for 2030 and 2050**, with detailed set of **more than 90 policies and actions** mostly related to mitigation of GHG emissions in following areas: energy, transport, industrial processes, agriculture, land use, livestock, forestry and waste.

The **energy sector** remains the largest contributor to GHG emissions (around **70 percent due to using fossil fuels for electricity production**) and therefore, most of the mitigation focus rests there.

**Climate and Energy policies are completely aligned.**

Climate Change considerations are mainstreamed into **more than 40 national legal and policies**, including the Law on Strategic Investment, to create more favorable conditions for selected investments in the various sectors relevant to climate change.

The Strategic Plan of the National Bank of North Macedonia for 2022–2024 incorporates “Increasing awareness of climate change and contribution to a green sustainable economy” as one of its strategic objectives.

# Decarbonisation of the economy

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## **What is decarbonisation?**

*Stop or reduce carbon gases, especially carbon dioxide, being released into the atmosphere as the result of a process i.e. switching from the use of fossil fuels such as coal, natural gas or oil to carbon-free and renewable energy sources.*

## **What is decarbonised economy?**

*Economy based on low levels of greenhouse gas emissions, particularly in energy-intensive sectors such as energy and heat generation or mobility.*

The war in Ukraine changed the geostrategic influence on the energy markets in the world, manifested mainly through the changes in the price of energy fuels and electricity in the European Union and took toll of the low-carbon transition plans. The fuel prices skyrocketed (for example crude oil prices were below \$0 in spring 2020 due to the rapid drop in energy demand and reached 99\$ in April 2022) and rising electricity (113 EUR MWh in Sep 2021 to 315 EUR MWh in March 2022, with frequent oscillation and pick of 650 EUR MWh in September 2022) and gas prices threaten to crush the already vulnerable economies. For the first time, climate change topped the risk rankings for experts in every geography. Climate change, geopolitics and energy are forming a new nexus of risk, making it more difficult for governments to stay on the green transition pathway<sup>iv</sup>. Soaring energy prices have prompted governments to rethink their energy policies. Many countries – including North Macedonia – are considering ramping up fossil fuels as part of their response, but increasing fossil fuels would put the 1.5 degrees Celsius target beyond reach<sup>v</sup>. **Achieving the 2050 target depends on making rapid progress now.**

This highlights the importance of the implementation of the climate change strategic divergence away from fossil fuels as a tool to “control” energy costs and secure energy independence against further energy shocks in the years ahead.

The **positive side** of the energy crisis is that for the first time the expansion of renewables and electric vehicles outweighed coal demand globally, resulting in only 1% expected rise of greenhouse gas emissions (GHG) in 2022<sup>vi</sup>.

**Decarbonisation of the North Macedonia’s economy is related to four important aspects:**

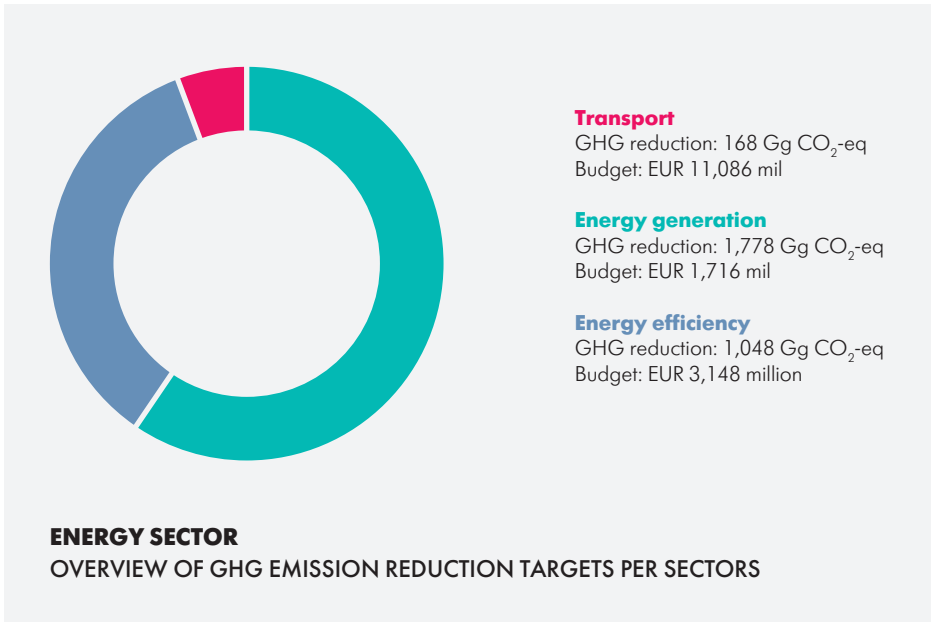
1. **Closing down** the thermal power plants Oslomej and Bitola (stop production of electricity from coal);
2. **Increase** the share of renewables in the electricity production mix;
3. **Reduce** electricity import dependence (that reached high 65% in 2021) and
4. **Preserve** the forests as the only carbon sink in the country (can be easily undermined by the non-efficient management of forest resources).

National climate and energy actions are ambitious and set the country on the decarbonisation pathway, but they come with certain assumptions and costs.

The main **assumptions** rest on decommissioning (closure) of the Thermal Power Plants (TPP). The national policies anticipated closure of TPP Oslomej in 2021 and the TPP Bitola after 2027 (NECP), as well as high penetration of gas and renewables to reduce the electricity import gap. However, the energy crisis shifted these priorities to 2027 (Oslomej) and even to 2040 (Bitola) to ensure stability of the energy system in the country, taking the tool on the decarbonisation process in the country. Moreover, due to energy crisis, the country has imported coal and restarted Oslomej and ESM started new investments in two new coal mines in the country. This will jeopardize the energy and climate change GHG reduction targets, as well as previous efforts to engage more renewables in the energy mix.

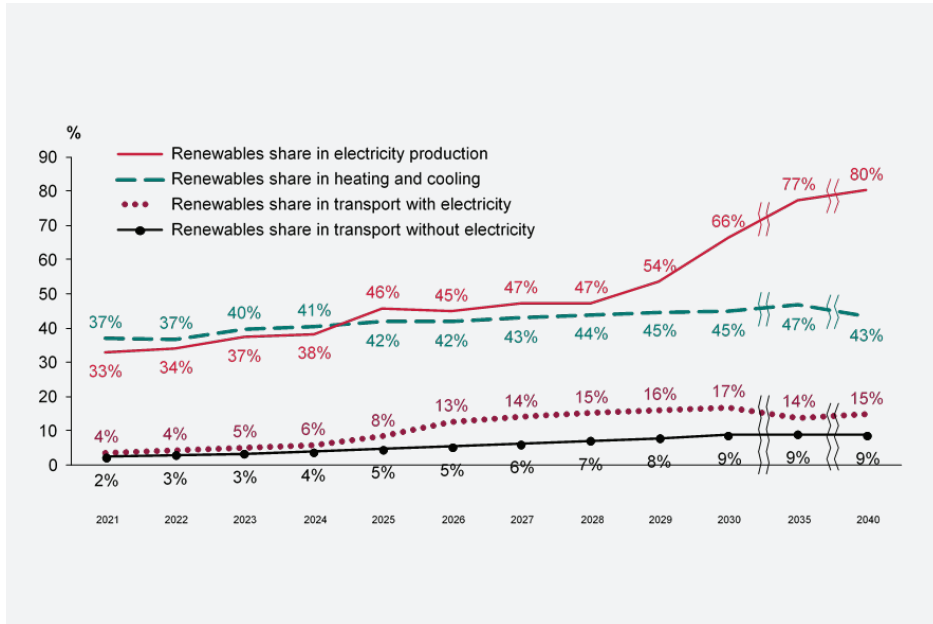
The planned **cost** for implementation of the ambitious decarbonisation policies is estimated to 25,031 mil EUR, of which about 99% for investments in the energy sector. The average yearly investments should be approximately 7.7% of the total average annual GDP. If all of the measures are implemented in parallel, and the “Energy efficiency first” principle is applied, then, the total investment can be reduced in the range from 7% to 19%, compared to the situation when each of the measures are implemented separately. **This makes economic case of decarbonisation pathway being cheaper than current policy pathway.** The Enhanced Nationally Determined Contribution (NDC) Financing Strategy establishes the most attainable financing scenario given current investment patterns and structures for the country’s largest emissions sector, energy, as well as the other sectors of waste, forestry and agriculture.

**Figure 1.** Costs for achieving GHG emission targets, enhanced Nationally Determined Contributions on Climate Change



Renewable energy financing in North Macedonia has been traditionally dominated by public finance from international and domestic sources. With the development of a more sophisticated policy and regulatory framework, opportunities have recently been created for private finance. The NECP estimates ambitious targets for the share of renewables in gross final energy consumption for 2030: 66% in electricity production, 45% for heating and cooling and 17% for the transport sector (biofuels and electric vehicles). The indicative trajectory shows that by 2025, the share of RES in electricity will reach a reference point of 43% of the total increase in the share of RES in electricity between the 2020 binding target and its contribution to the 2030 target.

**Figure 2.** Estimated trajectories for the share of renewable energy sources in gross energy consumption in the electricity, heating and cooling, and transport sectors



Another layer of the successful decarbonisation of the energy sector in **North Macedonia are the Carbon Tax** and the corresponding **EU Carbon Border Adjustment Mechanism (CBAM)**.

The **Roadmap for introduction of carbon tax** recommends to introduce a carbon tax to all users of energy (electricity and heat producers; industrial, commercial and residential energy users; and transportation systems), in order to achieve progress towards reaching the overall national climate goal for the energy sector. The suggested carbon tax prices are 8 and 28 EUR per ton in 2025 and 2030, respectively. Due to the energy crisis, the Ministry of finance prolonged adoption of new legislation that should put environmental tag on fuels. On 15 March 2022, the EU Council adopted the Carbon Border Adjustment Mechanism (CBAM) Regulation, with a main objective to avoid carbon leakage (if for reasons of costs related to climate policies, businesses in certain industry sectors or subsectors were to transfer production to other countries or imports from those countries would replace equivalent but less GHG emissions intensive products). The CBAM will enter into force in 2026, and would initially apply to imports in five emissions-intensive sectors deemed at greater risk of carbon leakage: cement, iron and steel, aluminium, fertilizers, and electricity. The national sector that would be mostly affected by the CBAM is the production and export of iron and steel products.<sup>vii</sup>

# Key findings

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North Macedonia has options in all sectors to at least halve emissions by 2030. Most of the components are in place to follow the lead of other European countries and profit from large scale investment into energy, industrial and built infrastructure. However, the zero-carbon transition requires major shifts in the energy sector and significant investments to support it. Relevant institutions are given mandates for climate actions, but they lack the adequate specific structures and most of all, they **lack** the adequate resources in terms **of sufficient and qualified staff** to support the decarbonisation process (low and declining human capital).

The Government has invested 760,2 million EUR so far in number of anti-crisis measures to avoid electricity or heating restrictions and mitigate the price shock to the economy, companies and citizens. These measures varied from investments (increasing the share of renewables with new solar power plants) to response (compensate EVN for the rising prices). As the country imports more than half of its electricity, the electricity price will be dependent of the stock market until larger in-country production is secured. Policies of North Macedonia follow relevant global trends and adhere to EU policies and measures to diversify oil and gas supplies and to accelerate structural changes.

Utilizing solar energy in every household and company is a prerequisite for adequate response to the energy crisis. The Government has to further channel its efforts to ease the procedures for connecting household/private PVs to the grid, and to leverage public funds for a fast and cost-competitive transition.

Economic growth is expected to decelerate to 2.1 percent in 2022<sup>viii</sup>. If the Ukraine war is prolonged, it would further reduce external demand, increase key commodity and energy prices, hamper mobility, and result in investment delays.

In order to assess the right turn back to the decarbonisation path, the Macedonian Academy of Sciences and Arts made several scenarios trying to estimate the impact of the energy crisis<sup>ix</sup>. Various carbon tax prices by 2035 are also considered, in line with the CBAM mechanism. The key finding of this assessment is that the **investments in Renewable Energy Sources (RES) and Energy Efficiency are the most cost effective solution, can decrease energy consumption and improve domestic production of electricity from renewables**. Their assessment also points out that in order to ensure security of supply and electricity at affordable prices, TPP Bitola needs to operate at least until 2029 (in some scenarios it operates until 2034 but with reduced intensity).

**“The energy crises recovery scenarios show that in 2030 there may be a deviation from the greenhouse gas emissions goal if insufficient investment is made in renewable energy sources, including large hydro power plants, and the price of gas remains at a high level for a longer period.”**

**PhD Aleksandar Dedinec**

*Scientific collaborator, Macedonian Academy of Sciences and Arts*

Source: Mitigation report for the Fourth National Communication on Climate Change



Other regional analysis<sup>x</sup> also showcased that a decarbonisation of the power sector by 2045 is possible while saving costs and ensuring security of supply, only if complemented with vast amounts of RES for the transition. Storage technologies provide flexibility & scalability for renewables expansion.

The international community and the donors have provided significant financial and technical support for the decarbonisation pathway of North Macedonia, including development of all the energy and climate policy documents, roadmaps, de-risking analyses. Moreover, international support is essential in prompt transition towards low-carbon development.

Staying on a climate-safe pathway would require: 1) appropriate human and technical capacities across all government departments involved and 2) enhanced private-sector investments in renewable power generation.

A number of **barriers/risks** prevent private-sector investment in renewable power generation. Financing of renewable energy projects is challenging due to both the high cost of capital, resulting from investors' perception of risk, and existing market barriers. Barriers to renewable energy investment pertain to three main areas: **i) project start-up and development; ii) investment risk management; and iii) scaling up of investment.** The relevance of the risks (specified in the table below) to renewable investment is medium to high in North Macedonia except for political risk, currency risk, and policy and regulatory risk with low relevance.

**Figure 3.** De-risking investments in North Macedonia, focusing on power, heating and cooling (IRENA, 2021).

Type of barrier	Specific barrier or risk	Relevance for NM
Project start-up and development	Limited experience in the financial sector	High relevance
	Availability of investment-ready projects	Medium relevance
	Limited access to capital	High relevance
Investment risk management	Political risk	Low relevance
	Policy and regulatory risk	Low relevance
	Counterparty risk	Medium relevance
	Grid interconnection and transmission line risk	Medium relevance
	Currency risk	Low relevance
	Liquidity and refinancing risk	Medium relevance
	Resource risk	Medium relevance
	Technology risk	Medium relevance
Scaling up investments	Insufficient investment size and high transaction costs	High relevance
	Financial regulations restraining illiquid and riskier investment	High relevance

	High relevance	High relevance
	Medium relevance	Medium relevance
	Low relevance	Low relevance

The financial sector in the country has limited experience in the financing of renewable energy projects. With a total of USD 340 million invested between 2005 and 2019 – or about USD 24 million per year on average – there has been a limited opportunity for the sector to learn so far. More than half of this investment was targeted at small hydropower projects, while more learning is required in wind, solar, geothermal and biomass.

Access to capital for financing these projects remains as high relevance risk. There is **lack of investment-ready projects, experience** and **capacity** in providing access to capital for larger-scale solar, wind and other new renewable energy technologies as well as new blending approaches for **using public capital to leverage private finance**.

Technology is marked as medium risk due to the lack of expertise and use of new technology in the market and unskilled labour force.

To conclude, financial-sector regulations are currently a barrier with high relevance. Current financial regulations discourage banks and institutional investors from providing long-term lending to renewable energy projects. Changes in the banking sector in North Macedonia are needed in order to extend long-term loans against unsecured project companies with offtake and fuel agreements, which are used for renewable energy projects<sup>xi</sup>.

Key findings:

1. National energy and climate policies complement each other and are based on sound scientific research;
2. Decarbonisation is a tool to “control” energy costs and secure energy independence against further energy shocks in the years ahead;
3. Decarbonisation is still the cheapest way out of the energy crisis;
4. Investments in renewable energy sources and energy efficiency are the most cost effective way to revigorate smart decarbonisation investments
5. Strong technical and financial support from the international community and donors is essential.

# Conclusions and recommendations

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At the current juncture of the war in Ukraine, the food and energy crisis may lead to delays in reforms implementation needed to boost renewables and consolidate green transition. If the war in Ukraine escalates, regional output could decline even further, pushing inflation upward. With limited fiscal space, elevated public debt, and increased cost of financing, fiscal support needs to be redirected to investments in renewables and energy efficiency rather than on “patching holes”.

There is no magic wand to resolve all the challenges in a flash, therefore short-term interventions to ameliorate immediate challenges must be accompanied by strong focus on a successful energy transition in the medium and long term. Policy efforts need to be geared towards building social and climate resilience that will reduce the country’s vulnerability to future shocks and reinvigorate the decarbonisation momentum over the medium term. Structural reform efforts need to be aligned with the green agenda and enable the low carbon transition and reduced greenhouse gas emissions.

The Government should use this period of stagflation to rethink decarbonisation policies and measures in order to address following key recommendations:

## **1. Invest in human capital in key policy institutions**

Knowledgeable administrative servants in key governmental institutions are essential support in the decarbonisation transition. The Government should invest in people, in building their knowledge and in ensuring appropriate mechanisms to retain them on a longer run. The **Report on Climate Change Institutional Capacity Assessment** proposes a gradual increase of capacity in the key public institutions, first and foremost at Ministry of Environment and Physical Planning, Ministry of Economy, the Energy Agency, the Ministry of Finance, Ministry of Agriculture, Forestry and Water Economy, Ministry of Interior, Ministry of Transport and Connections, Ministry of Economy, Customs Authority and Ministry of Labour and Social Policy.

## 2. De-risk the renewables and energy efficiency investments

Macedonian policies set the country on the right decarbonisation track. It is time to speed up their implementation and de-risk investments in renewables/energy efficiency in combined action between the Government and Development Finance Institutions (DFIs). The Roadmap for **De-risking investments in renewable energy finance in North Macedonia**<sup>xii</sup> reveals specific actions to address project start-up barriers, as well as development and investment risks. In the short term, the Government needs to focus on the continued implementation of selected policy and regulatory priorities, combined with the development of local capacities in the financial and renewable energy sectors. Priorities include the provision of Government guarantees, especially for larger-scale projects. Additionally, the Government should continue raising awareness about the tools and mechanisms available to facilitate renewable energy finance. In the medium to long term, the focus should shift to creating an opportunity to scale up the market via standardized contracts and bond issuance. Another important document, the **“De-risking Roadmap for NDC enhancement in North Macedonia**<sup>[ii]<sup>xiii</sup>”</sup> highlights the need of unlocking the ESCO market and setting a set of standards and regulations as short-term de-risking actions.

## 3. Introduce carbon tax

Following the steps of the **Roadmap** for the Introduction of a National Carbon Tax in the Republic of North Macedonia” offers a way for the Government to take advantage of market forces to provide more targeted support to the domestic economy and encourage a broad set of low-cost emissions reductions from across the energy sector. The revenues generated from the carbon tax could be used to: a) rebate energy costs to protect vulnerable, low-income consumers least able to afford the cost increase, b) help workers in the coal sectors transition to jobs in other industries; or c) to ensure a level playing field for competitive industry sectors by offering funds to industries deemed to be at-risk for emissions leakage by the EU.

*Decarbonisation will not be easy. But it is possible, if both the public and private sectors do their parts*

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## Contact information about KAS

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Address: Risto Ravanovski No 8,  
1000 Skopje  
Phone number/Fax: +389 2 321 70 75  
+389 23 21 70 76  
E-Mail: [Skopje@kas.de](mailto:Skopje@kas.de)

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## **Contact information about IDSCS**

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Address: Str. Miroslav Krlezha 52/2,  
1000 Skopje

Phone number/ Fax: +389 2 3094 760

E-Mail: [contact@idscs.org.mk](mailto:contact@idscs.org.mk)

# Information about the author

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**Pavlina Zdraveva** is a distinguished professional with more than 20 years of experience in international organizations in the areas of environment and climate change, including adaptation, mitigation, finance, capacity building, transparency, monitoring, reporting and verification. She has managed/supported development of various policy and strategic documents in the Republic of North Macedonia, Western Balkans and South Eastern Europe Region, in the areas of decarbonisation and climate resilience. Ms. Zdraveva led the preparation of the Macedonian NDC i.e. the “Enhanced Nationally Determined Contributions on Climate Change”, resulting in adoption of the most ambitious NDC in the region in the area of climate change mitigation, covering

all relevant sectors: energy, transport, industrial processes, agriculture, forestry, land use and waste. She also ensured development of various strategic documents to enhance NDC implementation: Roadmap for implementation of the enhanced NDC, Strategy for financing of the enhanced NDC, De-risking analyses, Socio-Economic and COVID related analyses etc. She provides valuable advice and supports the Macedonian Government in bringing the country closer to the Paris Agreement and EU goals of decarbonising economies and improving resilience.

## Link

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