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Global Resource Security: Challenges and Recommendations for Political Action

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Securing the global supply of resources is one of the key challenges of the 21st century. The growing demand for raw materials worldwide exacerbates both the scarcity of available resources and the competition among consumers. Being transnational in character, the issue of securing the supply of raw materials is no longer the exclusive preserve of economic and environmental policy but is increasingly acquiring a foreign and security-policy dimension. Not least for this reason, the Federal Government decided to place global resource security on the agenda of the German presidency of the EU Council and put it up for discussion at the G8 summit meeting at Heiligendamm in June 2007. It is clear that Germany can satisfy its national interests and needs only if this goes hand in hand with a joint European strategy which, in turn, must take global developments into account.

This discussion paper is based on the results of a conference on global resource security which, jointly sponsored by the Konrad Adenauer Foundation and the EastWest Institute, was held in Berlin on October 5/6, 2006. The paper describes the great challenges inherent in securing the supply of raw materials and proposes political approaches for their solution.

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I. Current Problems Associated with the Global Supply of Resources

Resource availability plays a key part in securing our prosperity. Oil, gas, and coal represent the most important fossil energy sources for the industrial, traffic, and transport sectors as well as for private consumers. Together with mineral and metallic raw materials, they constitute important resources for meeting our daily needs. The availability of raw materials is a fundamental prerequisite for economic growth, for a modern society cannot function without them.

Raw material sources are unevenly distributed across the regions of the world, which is why they must be sold, bought, and transported. Like many other major industrialised nations, the Federal Republic of Germany needs to import a large proportion of the raw materials it requires. Currently, Germany imports more than 90 percent of the oil, more than 80 percent of the gas, and more than 60 percent of the coal it needs. Russia alone excepted, the other G8 states similarly depend to a large extent on raw-material imports.

As the prosperity of the world increases, new players develop a great demand: At present, the economies of China, India, and other emerging countries are rising rapidly, and so is their demand for raw materials. The International Energy Agency (IEA) expects the global demand for energy to increase by more than 50 percent over the next 25 years. More than 70 percent of that added volume will be claimed by the developing countries. It is estimated that China alone will consume 450 million tons of crude oil per annum in the next 15 years while producing no more than 180 million tons itself. A corresponding boom is expected in the demand for metals and minerals.

The growing demand for fossil energy carriers will cause energy-related CO₂ emissions to increase by more than 50 percent on a global scale, so that the growing demand for raw materials will entail serious consequences for the environment and the climate. As *Germany opts out from nuclear power generation* according to plan, its demand for fossil energy carriers is bound to grow further. At present, around 25 percent of Germany's total energy demand is supplied by nuclear power. As renewable energies will not be able to cover this share entirely within the foreseeable future, imports of crude oil, natural gas, and coal will expand further.

The growing demand causes raw materials to become scarce on the global markets. This scarcity manifests itself in price increases: Oil prices have soared since the end of the 1990s. In the period between 1986 and the beginning of this millennium, a barrel of oil sold for around 20 US Dollars. In June 2006, the price of oil reached an all-time high of almost 80 US Dollars per barrel. Similarly, the prices of gas, minerals, and metals went up markedly in the last few decades. Import-dependent industrialised countries like the Federal Republic of Germany are helpless in the face of high

and volatile world-market prices – with all the consequences that entails for production, employment, and consumption.

In many cases, regional political and social unrest and conflicts in the raw-material producing countries share in the responsibility for price fluctuations on the commodity markets. Especially in developing countries that are rich in raw materials, natural resources frequently figure among the causes of allocation conflicts, ethnic and social rivalries, and civil wars. In these countries, revenues from raw-material exports are often spent not on promoting sustainable development but on arming an authoritarian regime. Domestic unrest and confusion add considerably to the insecurity of the resource supply.

The *investment climate for multinational corporations operating in the raw-materials sector suffers* from present uncertainties, so that no investments are made in new capacities and technological developments in raw-material extraction. In the long run, this will cause resources to become scarce. In view of the fact that around 70 percent of all known oil and gas deposits are located in politically unstable regions, stabilisation in those countries that export raw materials is a factor of importance in securing our supply.

One of the why reasons the increase in the price of oil and gas, both fossil fuels, was so swift is that the unusually rapid growth of the global demand went unnoticed for a long time. Because crude-oil prices remained low throughout the period from 1986 to 2000, *investments in extraction capacities were not made in time* in some regions of the world. China, for one, neglected its domestic oil production because it was thought that sufficient quantities could be bought on the world market.

A similar glut of *minerals and metals* such as iron ore, steel, or coke persisted for a long time, causing prices on the international market to crumble. This led the extraction industry to think that further investments would be unprofitable. Yet another high plateau can be observed in the prices of some *rare raw materials* such as coltan, a non-ferrous metal which is needed to manufacture mobile phones and other products. Germany is placed in an especially difficult situation by the increase in raw-material prices: As late as the 1980s, there were many companies that united everything from mining to manufacturing under a single roof, but the economy gradually took leave of this vertical integration model in later years. As a consequence, the German economy of today depends more than ever before on purchasing the raw materials it needs on the world market, so that German companies are particularly vulnerable to the fluctuations of world-market prices.

Together with the uneven distribution of deposits, the scarcity of raw materials leads to the *formation of dependences between raw-material importing and exporting nations*. The governments of some raw-material producing countries tend to use their deposits as an instrument of power politics. At the moment, Russia operates a strategic energy policy to enhance its monopoly within the CIS, attempting at the same time to dominate the supply of gas to the EU states. Even today, Germany imports

37 percent of the natural gas and 41 percent of the oil it needs from Russia, so that a considerable part of its energy supply is provided by its neighbour in the east. Amounting to more than double the original price, the increase announced by Russia in 2006 for deliveries to its client states, Ukraine and Georgia, should be interpreted as a warning signal. The examples of Iran, Venezuela, and Bolivia show that caution should be exercised in dealing with producer countries, for a formerly cooperative attitude may be replaced by an unpredictable policy at any time.

Uncooperative behaviour is often accompanied by *detachment from the democratic community of values formed by the OECD states*. Some major raw-material exporters such as Saudi Arabia or Algeria have so far refrained from joining the World Trade Organisation which sets the framework conditions for trading in raw materials.

Tendencies towards *renationalisation in energy policy* are becoming apparent world-wide. In Russia or Bolivia, for example, the privatisation of energy corporations has been reversed, while France and Spain are attempting to protect their energy markets against foreign investors. This development threatens the viability of a future global energy market.

Another problem lies in the *vulnerability of the resource-transport infrastructure*. Oil tankers and pipelines are equally threatened by accidents, natural disasters (such as the hurricane Katrina), selective terror attacks, and wars. All these may potentially enhance international scarcity, entailing at the same time serious price and supply risks that might have a global impact on the economy.

Another destabilising factor lies in the fact that any uncertainties existing on the resource markets are easily transmitted to the stock exchange floor. The mere *fear* of a risk offers a promising *point of attack for speculators on the financial and capital markets*. In phases of tense and uncertain price developments, great profits may be made from arbitrage deals, a fact which accounts for the high volatility of raw-material prices.

II. Steps towards a Secure Supply: Ten Calls for Political Action

From the above description of the problems involved, a number of conclusions may be drawn that are important for a research strategy which primarily aims for a secure supply. The following section contains ten key landmarks that provide political players with building blocks for a resource supply that is secure, affordable, sustainable, environmentally friendly, and accepted by society.

1. Diversify Raw-material Sources and Types

As the raw-material deposits of this Earth are concentrated in certain regions, a sustainable national raw-material strategy must necessarily aim to obtain raw materials

from as many suppliers as possible. A country that allows itself to become dependent on *a single* vendor will be susceptible to his power strategy and more vulnerable in the event of a crisis. By diversifying its sources, a country can enhance the security of its supply and support the international balance of power at the same time. Especially the fact that both Germany and the EU are growing more and more dependent on Russia's supply of fossil energy carriers, namely natural gas and oil, calls for some thought in this context.

Not only the sources but also the types of raw material on which a country depends should be as varied as possible. This holds particularly true in the energy field, where different raw materials may be substituted for each other. The position of the Federal Republic of Germany is satisfactory in this regard: About two thirds of its energy are generated from coal, gas, and oil. Around 25 percent are generated by nuclear power stations, and around 10 percent from renewable sources.

To retain this energy mix, and to place the security of its supply on a broad foundation, the Federal Government should reconsider its intention to opt out from the peaceful use of nuclear energy, giving all due consideration to the safety risks inherent in nuclear power generation. The public debate about nuclear power labours under an ideological burden. 20 years after Chernobyl, the arguments fielded against nuclear power do not reflect the present state of knowledge in nuclear technology. Opting out from nuclear energy would not only isolate Germany from its partners in Europe and the West but would also cause it to lose its global leadership in nuclear technology. The question is whether opting out is still a defensible position when numerous states, such as Sweden, Finland, China, and Russia, are relying more on nuclear energy at the same time.

2. Reinforce the Use and Promotion of Renewable Energies

Renewable energies help to strengthen the security of our supply. The Federal Government aims to cover around 20 percent of the German energy demand by renewable energies no later than 2020. This would serve to reduce the country's dependence on raw-material producers and support the diversification of our energy supply. At the same time, it would constitute a major contribution towards the conservative management of our fossil-energy resources, from which our environment stands to benefit.

So far, biofuels, solar cells, wind turbines, and geothermal energy lack the efficiency required to replace fossil energy carriers entirely, nor are their prices competitive enough. However, it is within their capacity to meet part of our demand and mitigate our strategic and economic dependence on fossil energy carriers. Players in politics and the economy must persist in their endeavours to refine renewable-energy technologies and make them competitive.

Leading the global field in researching and developing alternative sources of energy, Germany stands to benefit greatly from this: Together with other emerging countries, China is beginning to show a profound interest in these new technological developments not only because of the growing demand for raw materials but also because of a gradually developing environmental consciousness.

3. Invest in New Technologies

Other sustainable new developments in the energy sector must be advanced. Using hydrogen technology in the field and developing nuclear technology further may make us less dependent on the fossil fuels gas, oil, and coal that hitherto dominated the scene, contributing at the same time towards securing our supply and reducing CO₂ emissions.

But technological progress may also help to ensure greater efficiency and environmental sustainability in the use of fossil fuels. Thus, the *clean coal technology* enables coal to be used more sustainably and profitably than in the past. In view of the fact that more than 60 percent of the known reserves of fossil energy carriers consist of coal, progress in this field is very important indeed.

Most of the power stations now operating in western Germany were built in the 70s. In the near future, we will be confronted by the challenge of replacing these now-outdated plants by more modern and efficient technologies. The investments required in this context offer a great opportunity of deploying new technologies in the field. The Federal Government should take advantage of this opportunity aggressively, in cooperation with the power utilities.

Discovering alternative sources of energy and investigating new raw-material properties constitutes yet another task. In the process, all due consideration must be given to ideas and developments from other countries: Brazil, for example, has been gathering experience in the production and use of biofuels for decades. Such knowledge should be consulted without reservation.

4. Step up Efforts to Discover and Develop New Deposits

There still is a great wealth of raw materials on our Earth. Many forecasts about the ultimate exhaustion of raw-material reserves had to be revised. Whereas the oil reserves of the world were estimated to amount to 1.7 billion barrels in the early 80s, as many as 3.3 billion barrels are supposed to exist today. Some years ago, it was expected that half the oil reserves of the world would be exhausted by the mid-1990s. By now, experts calculate that this status will be reached sometime between 2020 and 2040. By steadily prospecting for new deposits and developing related technologies, new reserves have been uncovered and new insights gained, refuting earlier forecasts about the finiteness of the Earth's raw-material resources. The prob-

lem lies not only in the finiteness of the deposits but also in the difficulties attending their development.

New methods might help to find hitherto-undeveloped resource deposits where access is difficult. It is supposed that a large proportion of these undiscovered deposits is to be found underneath the bottom of the sea. To develop these sources economically and sustainably, we must invest even more in the refinement of our extraction technologies. It is important for both business enterprises and the state to step up their joint investments in related research projects.

5. Establish Multilateral Cooperation among States

Securing a sustainable supply of raw materials to the world is a transnational problem that can be solved only by an international effort at all levels. No nation state can ever succeed on its own. Cooperation among exporting, importing, and transit countries should be motivated by their shared interest in stable prices, reliable sources, and secure transport routes.

The point is to strengthen those international codes that secure global resources. The new demanders among the nations are not our opponents but our partners: Their interests are similar to ours. Like the supplier states, they must be integrated more than hitherto in existing structures, so that any conflicts may be settled by arbitration in the future.

Signed as early as 1994, the multilateral *Energy Charter Treaty* which entered into force in international law in 1998 offers an opportunity to create a comprehensive global energy system: Containing an undertaking to cooperate in the energy sector on a long-term basis, the Charter aims to contribute towards securing the global supply. Next to terms of trade that are conformable with the rules of the World Trade Organisation (abolition of high export duties and non-tariff trade obstacles), the Charter postulates safety for investments and efficiency in the use of energy, with some consideration being given to environmental-policy aspects. In addition, the Charter offers a dispute settlement process.

The Treaty has been signed by all former Soviet republics, Japan, Australia, and the member states of the European Union as well as by all other countries of Central and Eastern Europe. The USA and Canada declined to join. There are some states – including Russia as an important supplier of energy – which did sign the Charter but have not ratified it as yet. In this context, it is necessary to step up the effort to integrate Russia as a major supplier of energy in the obligations laid down in the Charter.

The *Joint Oil Data Initiative* (JODI) is another transnational instrument that needs to be improved and enlarged to cover other sources of energy, particularly gas. Seven international organisations (including OPEC, the EU, and the OECD) joined hands in

this initiative which collects statistical data about the volume of oil extracted globally as well as about the demand for it, which are published in regular reports. The intention is to prevent major price fluctuations and the formation of speculative bubbles in the international oil business by ensuring greater transparency and providing reliable data.

Global approaches are desirable in international cooperation. At the same time, regional initiatives appear more promising as they can be more easily based on existing cooperation structures. Against this background, the plans to establish a common EU market for oil and energy by 2008 appear both necessary and appropriate.

The steps undertaken so far emphasise the importance of political leadership qualities in international resource cooperation. Political initiatives may break through hardened front lines, thus contributing towards transboundary harmonisation in the resource issue. In this way, cooperation on energy and resources promotes the dialogue between cultures and offers opportunities to create a more peaceful world.

6. Involve Suppliers through Bilateral Contracts

Complementing multilateral cooperation, bilateral contracts must be concluded with raw-material suppliers both at the government and the corporate level. Players in politics and business need to identify new partners and involve them in long-term trade relations through concrete projects, such as the joint construction of new pipelines or the enlargement of port capacities.

Both Germany and the European Union need to devote more attention to the resource issue in the management of their relations particularly with their eastern neighbours. German and European corporations need to show greater courage than hitherto in investing in Central Asia and supporting the construction of pipelines so as to forge a bond between Europe and this resource-rich region.

While quickening the pace of bilateral supply agreements, we should bear in mind that 85 percent of all oil and gas deposits are under governmental control, while no more than 15 percent are managed by global commodity corporations. For this reason, most of the action competence for bilateral agreements rests with the political decision-makers in the states concerned.

7. Support Stability and Transparency in the Producing Countries as well as Security for the Transport Routes

Stabilising the political and economic situation in raw-material producing countries forms part and parcel of securing the supply of raw materials. Western development cooperation promotes good governance in states without political and social stability. Responsible, democratic, and peaceful governments in supplier states will be more

receptive towards cooperative approaches, thus contributing towards securing the global raw-material supply. In liberal democracies, civil society and private business may share in the dialogue and provide impulses.

Especially in developing countries that produce raw materials, increasing the transparency of the allocation of revenues from resource exports may contribute towards sustainable development. Disclosing raw-material revenues supports the suppression of corruption and the development of responsible governance. Such disclosures form the basis for letting the local population share in the benefit of raw-material revenues. In this regard, it is the duty of investing corporations to participate in the gradual establishment of sound and transparent governance structures in developing and emerging countries that are rich in raw materials.

Another question that arises in the context of political instability in producer countries concerns the option of security-policy engagements to protect the supply of resources. In this regard, the Federal Republic of Germany should, after consulting with the European Union, state clearly whether or not supply security may serve to legitimise the involvement of joint forces in hotspots of crisis.

International resource cooperation should focus more on the transboundary structures required to transport oil and natural gas. Investments in energy infrastructures and particularly in pipelines contribute greatly towards securing the supply of natural gas and oil. Turkey, an important transit country for resource transports, seized the initiative to build pipelines in order to enhance the diversification of oil-transport media, thereby also mitigating the concentration of oil tankers in the Bosphorus straits. At the same time, this serves to reduce the likelihood of environmental disasters being triggered by tanker accidents.

8. Enhance Cooperation between the State and the Economy

Cooperation is needed not only at the intergovernmental level. Joint initiatives between corporations as well as consultations between governmental players and the private sector are needed just as urgently to secure our future supply. In this context, it is the duty of the political side to provide enterprises with stable and secure framework conditions that enable resource markets to function properly. Investments in raw-material extraction and power generation will only be made if enterprises can be at least roughly certain that their expectations regarding future revenues will materialise. This is particularly true in the raw-material sector where investments (such as oil platforms) are very expensive, and yields are uncertain because price developments are unpredictable. Further governmental duties include safeguarding fair competition, developing framework conditions that favour innovation, and forming human capital through education offensives.

Important though stable framework conditions may be, it is just as important to avoid hampering the private sector by excessive rulemaking. Driven by functioning competition, the private sector is normally better placed to advance technological developments than the state. Resource scarcity offers the private economy a chance to score by producing technological innovations that enhance the efficiency of resource development and utilisation.

The private sector must exercise its responsibility of supporting the state in its endeavours to ensure supply security. Business companies may help to minimise supply risks by concluding long-term contracts with their resource suppliers, diversifying their sources, and improving the efficiency of their stock management. Returning to raw-material *extraction* may also serve to mitigate their dependence on suppliers. Japan, for one, has always followed that strategy.

9. Promote Efficient Production and Thrifty Consumption

Energy efficiency must be increased further. To achieve this, particular attention must be paid to process innovations, meaning technologies that help to cut down on the consumption of energy and raw materials such as, for example, the development of power stations, engines, or domestic appliances that are more efficient in their use of raw materials. In this regard, the forces of the free market must be given free rein to a certain extent. Any businessman who sees a chance to save money will do so in his own interest and search for new solutions. What the state can do is to provide incentives and set targets.

Furthermore, we must strengthen the people's awareness of the need to deal conservatively with our resources. One way of doing this might be to mark certain domestic appliances with standardised and easily comprehensible labels that identify their raw-material and energy consumption. The consumer would thus be given part of the responsibility for the consumption of resources. At the same time, players in politics and the economy as well as consumer institutions and civil-society organisations must do their part to embed the need for thriftiness in raw-material consumption in the minds of the people as a principle of action. Particularly in the industrialised nations, where considerably more raw materials are consumed than in less developed countries, resource awareness in consumption constitutes an untapped raw-material reserve, emphasising the need for us to manage scarce resources more responsibly.

10. Approach Resource Security as a Problem for Political Strategy

The Federal Government should make resource security one of the key strategic missions of Germany's foreign policy. Securing the supply of resources to Germany is of the greatest importance for the German economy as well as for the maintenance of

our prosperity. This being so, global resource security constitutes one of Germany's elementary interests.

The fact that the responsibility for the supply of raw materials has not been specifically allocated so far in the Federal Government reflects the secondary importance accorded to the issue in German politics: At present, it is being handled by the federal ministries for economics, environment, development, and education and research as well as by the Foreign Office. Settling the responsibility once and for all on a 'Federal Agency for Resource Security' headed by an under-secretary of state would ensure that the issue is represented by a strong voice at the cabinet table.

III. Conclusion

Securing the global supply of resources constitutes a multi-faceted challenge, and it is becoming clear that the strategy designed to resolve it must be as versatile as possible. By adopting a coherent approach, we must ensure that the various solutions involved are closely interlinked and complement each other.

At all events, Germany must encourage the debate on energy policy jointly with the EU, addressing worldwide cooperation as a strategic challenge. Particular responsibility rests with the G8 states whose great importance for the economy of the world enables them to place supply security on the agenda and advance the search for solution approaches. The overall objective must be to ensure that no fresh international conflicts or crises arise as resources grow scarcer worldwide. Peace forms the basis of economic development and prosperity, to which Germany's G8 presidency must make its own contribution.

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