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Energy

The German Government's raw materials strategy

Safeguarding a sustainable supply of
non-energy mineral resources for Germany

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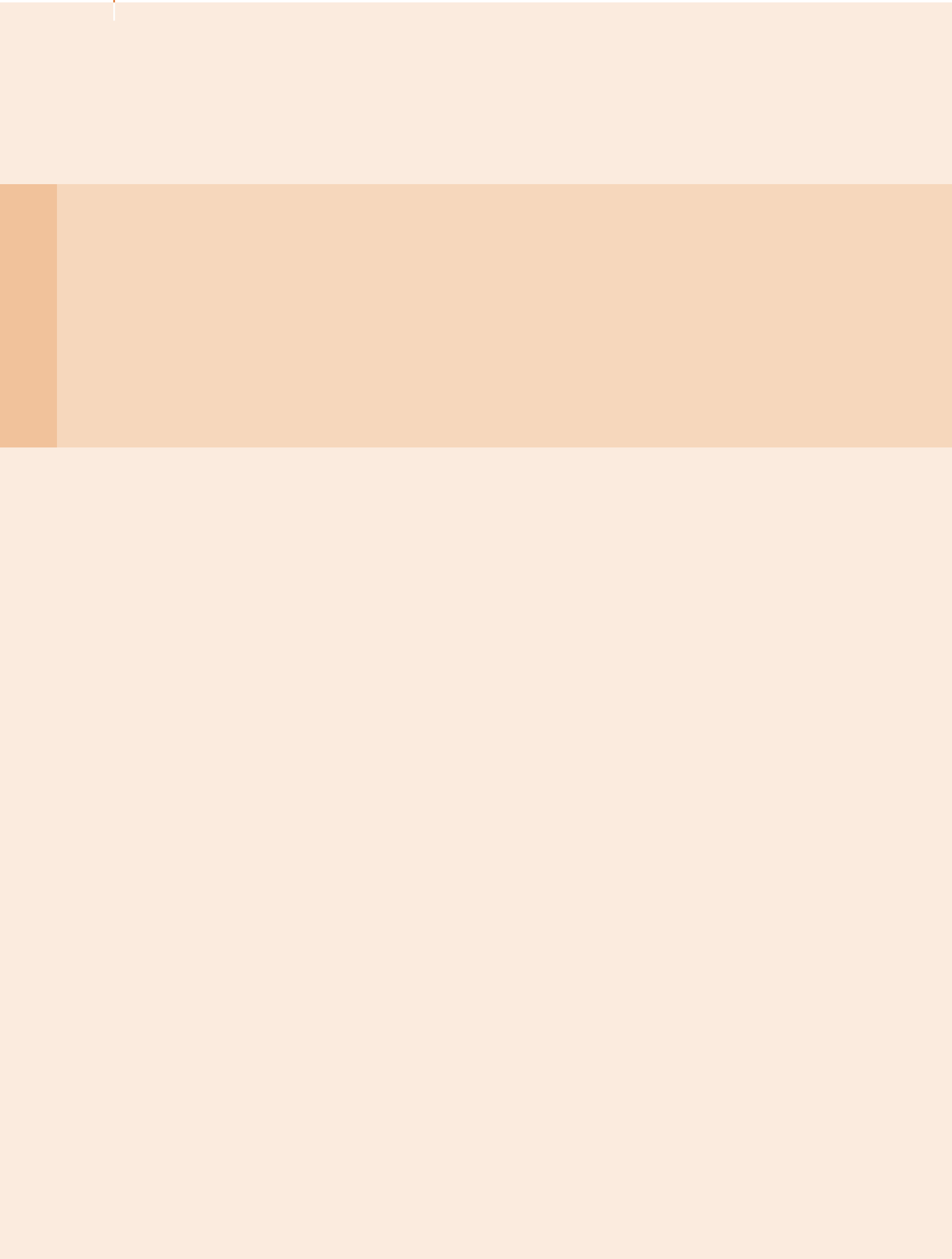
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Preliminary remark



It is vital to ensure that Germany's economy is supplied with the mineral resources that it needs. This is especially true of industrial raw materials, a field in which Germany is highly dependent on imports.

A policy for a sustainable raw materials supply is an integral component of our economic policy. Where market conditions and fair world trade prevail, supply and demand will keep aligning themselves, even as the market changes. In this way, functioning markets ensure stability and long-term security of supply. However, serious market disturbances can cause disruption with a substantial impact on commerce, environment and employment. The raw materials strategy is intended to shape the appropriate policies in order to help limit such market distortion and to alleviate its effects. At the same time, the Federal Government aims to put a political, legal and institutional framework in place to foster a sustainable and internationally competitive supply of raw materials to German industry.

Mineral resources are minerals from natural deposits which are extracted by mining. Deposits are the result of geological processes, so they are site-specific, geographically limited and non-reproducible. At present, there are no fears of any physical scarcity of raw materials world-wide. The only exception in the foreseeable future is likely to be crude oil. Sufficient quantities of all other raw materials are currently geologically available at present. Scarcities can only occur temporarily due to a lack of exploration, bottlenecks in extraction, transport or processing capacities, speculative effects or political intervention in the market; however, the price signals will ultimately

bring about a balance between supply and demand, possibly with several years' delay.

In terms of raw materials, both policy-makers and business bear a very special responsibility: the natural environment must be preserved and protected for future generations. This imposes an obligation to implement as comprehensively as possible the fundamental principle of sustainable development in the extraction and use of mineral resources, in the design, manufacture and use of goods, and in the recycling of re-usable materials in waste management schemes.

In 2007, the Federal Government elaborated **elements of a raw materials strategy** on the basis of an intensive dialogue between commerce and policy-makers, and made it the guideline for its actions. In the same year, the Federal Chancellor established an Interministerial Committee on Raw Materials to identify problems for commerce deriving from raw materials and to produce interministerial solutions. The Committee is chaired by the Federal Ministry of Economics and Technology (BMWi). In 2009, a comprehensive interim report on the activities of the Committee was presented to the Bundestag.

By adopting this strategic approach at an early stage, the Federal Government has led the way on the international front. It was not least the German debate on raw materials which prompted the European Commission to present an EU raw materials strategy¹ in 2008. The focus of the EU initiative is on issues which can be handled more efficiently and with greater urgency at EU level, especially in the field of trade and development policy. In mid-June 2010, the European Commission presented reports by two groups of experts as part of its raw materials initiative which highlight efficient licensing procedures for raw materials extraction projects² in EU member states (best practices) and identify critical raw materials³ for the Community

¹ Communication from the Commission to the European Parliament and the Council: The raw materials initiative - Meeting our critical needs for growth and jobs in Europe (Doc. 16053/08 – COM (2008) 699 final)

² Improving framework conditions for extracting minerals for the EU. Report of the Ad-hoc Working Group on Exchanging Best Practice on Land Use Planning, Permitting and Geological Knowledge Sharing. European Commission, June 2010

³ Critical raw materials for the EU. Report of the Ad-hoc Working Group on defining critical raw materials. European Commission, June 2010

industries. On this basis, the European Commission intends to present conclusions and recommendations in a Communication at the end of this year, in close co-ordination with the member states. The aim will be to tie questions of a secure supply of raw materials even more closely to the Community's trade, industry and development policy, and to tackle questions related to cutting the consumption of primary raw materials via recycling, research and development.

The entry into force of the Lisbon Treaty means that the EU will in future bear a greater responsibility for protecting foreign direct investment; this is becoming increasingly significant in the raw materials sector in particular.

At national level, the Federal Economics Ministry launched a renewed dialogue on raw materials with representatives of the Federation of German Industries, the raw materials processing sector, the recycling sector and the trade unions in May and June 2010. The findings of this dialogue have been fed into this raw materials strategy.

The following factors in particular made it necessary to move on from the "Elements of a raw materials strategy of the Federal Government" of March 2007:

- ▶ Major developing and emerging economies which consume raw materials, and especially China and India, have now given a strategic orientation to their raw materials policies and have taken measures to meet their needs for raw materials. In the medium term, this can impact on German and European companies' access to sources of raw materials.
- ▶ New studies indicate that the demand profiles for raw materials will change fundamentally in the coming decades due to advances in technology. It is necessary to ensure that significant innovations, e.g. in the field of environmental technologies, are not impeded by a lack of availability of raw materials.
- ▶ The raw materials processing industry is increasingly realising that bottlenecks on the raw materials markets can restrict output and impede innovation. Here, industry is called on to come up with its own responses to potential bottlenecks.

- ▶ The European Commission has adopted a raw materials initiative, and this needs to be closely integrated with Germany's national policy on raw materials.

The core objectives of the Federal Government's new raw materials strategy are:

- ▶ reducing trade barriers and distortions of competition;
- ▶ helping German commerce to diversify its sources of raw materials;
- ▶ helping commerce to develop synergies from sustainable economic activity and enhanced materials efficiency;
- ▶ developing technologies and instruments to improve the conditions for recycling;
- ▶ establishing bilateral raw materials partnerships with selected countries;
- ▶ doing research into substitution and materials in order to open up fresh options;
- ▶ focussing research programmes relating to raw materials;
- ▶ creating transparency and good governance in raw materials extraction;
- ▶ integrating national measures with European policy on raw materials.

The Federal Government aims to implement measures relating to these objectives in a balanced fashion following the principles of sustainable development. Here, equal weight should be given to economic, environmental and social aspects of a sustainable raw materials sector. Further to this, the Federal Government's raw materials strategy aims to take a holistic approach to raw materials, with the closest possible integration of all national and international levels of raw materials policy-making.

2 The general framework



The Federal Government agrees with the business community that it is basically a matter for the companies themselves to ensure their own supply of raw materials. The government activities at Federal level are concentrated on giving firm and effective backing to the private sector's efforts to secure raw materials; specific measures follow the principle of sustainable development.

The government backing particularly involves support for the private sector in the form of the instruments of raw materials policy, support for research, and a joined-up international raw materials policy which takes account of objectives of foreign, economic and development policy. Further to this, the German Government is raising awareness amongst Germany's regional governments that, when it comes to exploring for and extracting domestic raw materials, appropriate account should be taken of the interests of the raw materials sector in terms of spatial planning, regional planning and authorisation procedures.

The German Government does not intend to become commercially active itself in the field of the raw materials industry, e.g. by setting up a state-owned company for exploration or extraction projects. Nor does the Government intend to go in for government stockpiling of industrial raw materials.

The German Government underlines the fact that sustainable development and economic and social progress are not possible without good governance, respect for human rights and compliance with environmental and social standards. It calls on German industry to orient its commercial activity to internationally recognised instruments and initiatives like the OECD Guidelines on Multinational Enterprises.

3 Reducing trade barriers and distortions of competition



Mineral resources are geographically fixed and – viewed in global terms – unequally distributed. Global trade in raw materials and processed products is therefore crucial. For this reason, trade in raw materials which is as unrestricted and fair as possible is specially important for global economic development. The World Trade Organisation (WTO) highlighted this point in its most recent report.⁴

However, the sharp rise in demand for numerous major industrial raw materials has caused various countries to adopt trade-policy measures (e. g. export tariffs, export quotas, preferential import arrangements) which favour their domestic industry and thus distort international competition. Export restrictions like export tariffs, quotas, etc. are particularly prevalent in the case of metallic raw materials and fuel. In the medium term, this can imperil growth and employment in Germany.

For this reason, the German Government will press ahead in the context of EU trade policy to ensure that even more resolute action is taken against distortions in international trade in raw materials in future. Comprehensive and exhaustive use must be made of all the options available at both multilateral level (especially WTO accession negotiations, dispute settlement procedures) and the bilateral EU level (free trade agreements, bilateral dialogues, etc.). In addition the EU should review unilaterally granted trade preferences in this regard. For example, the German Government believes that the EU's interests in terms of raw materials should also be taken into account

during the upcoming reform of the Generalised System of Preferences – as long as poorer and poorest developing countries do not suffer. Similarly, the German Government will make even greater use of the bilateral dialogue with countries which distort trade and competition in order to achieve a reduction in the level of political intervention in the market.

The reduction of export restrictions plays an important role in the efforts to create a secure supply of raw materials. The poor/poorest developing countries should be granted a certain degree of flexibility and transitional periods when reducing tariffs in order to build up alternative sources of government revenue.

⁴ WTO Annual Report 2010

4 Measures to diversify supply sources of raw materials

As an industrial and exporting nation, Germany is especially reliant on a secure supply of raw materials. The German Government supports the German raw materials processing industry with targeted political backing in order to safeguard a sufficient quantity and quality of necessary raw materials via supply contracts, investment in exploration and mining, and the acquisition of concessions or shareholdings. For this reason, the industry should expand specific investments in Germany and abroad in order to safeguard the availability of raw materials, to take more vigorous advantage of opportunities to join in with projects of relevance to raw materials, and to diversify the sources of supply. The German Government is pursuing the following measures in particular to support private-sector activities:

1. Guarantees for untied financial loans

The Government's guarantees for untied financial loans insure the financing of raw materials projects abroad against political and commercial risks. In return, German companies which process raw materials receive long-term supply contracts. The untied loan guarantees were thoroughly reformed in 2009 in close co-ordination with commerce and business associations: the core elements of this reform are the inclusion of coverage for commercial risks, a reduction in the excess to be borne by the insured party, no additional charge for foreign currency transactions, and a risk-appropriate fee system.

Industry continues to be interested in using this guarantee instrument. Due to shifts in value chains, German industry is expecting to see increasing competition for products of the first processing stage coming on top of the existing tough competition for raw materials. For this reason, German industry is displaying a growing interest in building up long-term supply relations in this field too at an early stage. In view of this, the German Government and German commerce will intensify their dialogue on whether the criteria of eligibility can be expanded to include the first processing stage.

2. Investment guarantees

The German Government uses investment guarantees to support direct investment by German firms in developing and emerging economies as part of its efforts to promote foreign trade and investment. These guarantees offer protection against political risks due to state intervention, and are therefore an important element of commercial risk insurance. They make it easier for companies to obtain credit to refinance the foreign investment, and are already being used intensively in order to safeguard Germany's supply of raw materials.

3. Export guarantees (Hermes insurance)

Hermes insurance helps German plant and equipment manufacturers (including of mining equipment) to develop new or difficult markets by allowing the companies to insure their export transactions against non-payment by foreign clients. This makes the commercial risks easier to predict.

4. Geological studies prior to commercial exploration

On behalf of the German Government, the Federal Institute for Geosciences and Natural Resources undertakes geological surveys as part of research projects, especially in the area of the oceans and so-called frontier areas. On the one hand, this advance surveying aims to improve knowledge about potential global mineral resources; on the other, the findings benefit German commerce: they enable companies to carry out targeted exploration of areas assumed to have potential ore resources. In this way, the Institute is making an important contribution towards Germany's scientific and technical infrastructure.

Examples include studies of the existence and creation of manganese nodules in the deep Pacific Ocean, which could become a source of important industrial raw materials if it proves possible to develop environmentally compatible extraction methods. Research work in the circum-Arctic shelf areas helps to investigate hydrocarbon potential with a view to subsequent commercial exploration projects.



By developing new geo-scientific methods, e. g. in terms of remote sensing, geophysics or geochemistry, the Institute also helps to further develop German exploration and raw materials expertise.

The Institute's advance survey work is carried out sustainably and is thus compatible with nature. It makes an important contribution towards closing gaps in knowledge, e.g. with regard to deep-sea ecology. On the basis of the findings of these surveys, it is possible for the German Government to participate with a high level of science-based expertise in the drafting of international rules on the extraction of raw materials from deep-sea regions or frontier regions.

At the same time, the results of the advance survey work are also available to Germany's raw materials industry. The German Government would be glad to see industry making greater use of these services, especially with a view to the necessary diversification of sources of raw materials.

5. Promoting exploration

In the 1990s, Germany's raw materials processing industry almost entirely abandoned international mining activities. Given current market conditions, the industry says that re-entry into productive raw

materials extraction projects is hard to realise in view of the high financial barriers facing German industry. At the same time, the German Government believes that it is necessary to take this approach of upstream integration. With a view to the long-term, sustainable supply of raw materials, special significance attaches to exploration activities in advance of the actual extraction of raw materials, not least in terms of the entry costs.

At present, there are only a few firms in Germany capable of obtaining concessions abroad and undertaking targeted exploration campaigns. As a rule, what these companies lack is not knowledge of attractive projects, but rather the necessary capital base from which they can take on additional projects. This is all the more the case since exploration work, particularly in non-OECD countries, is subject to particular risks which – in case of failure – can threaten a company's survival.

The German Government is ready to examine whether reallocations in the current financial plan can create budgetary scope to reduce these risks by providing targeted support for exploration in the form of conditionally repayable loans, thereby creating incentives for exploration projects. However, for this to take place commerce must identify appropriate and sustainable exploration projects which are worthy of funding in terms of raw materials policy, and propose that they be given government support. These projects must take into account the need to protect climate, soil, water, air and biodiversity.

The Government could base support for such projects on the Federal Government Exploration Support Programme which helped companies between 1972 and 1990. Here, special significance attaches to those raw materials which have been identified as being especially critical in the recent study by a group of experts of the European Commission.

6. Domestic extraction of raw materials

Germany possesses substantial reserves of domestic raw materials. Extraction and processing of these raw materials takes place on a significant scale in Germany, and in some instances they meet the entire needs of German commerce. This includes in particular raw

materials for the glass and ceramics industry, the iron and steel industry, the electronics, chemical and fertiliser industry and the construction sector.

In geological terms it will be possible to meet the long-term needs of industry, especially for raw materials for the construction industry, salts and special non-metallic raw materials, from existing domestic deposits. However, there are fears on the industry side that competing land uses will lead to supply problems.

The legal basis at federal level for raw materials extraction in Germany is adequate. No new legislation is needed; there is agreement on this point both on the part of the national and regional spatial planning authorities and within the Federal Government. This applies, on the one hand, to specialist laws such as the Federal Mining Act and the Mineral Deposits Act and, on the other, to the laws covering the German spatial planning system: the Federal Building Code, the Federal Regional Planning Act and the regional planning laws of the Länder.

The increasing importance of raw materials supplies and of safeguarding them to ensure and develop business capacities across the board is reflected in some very different ways in the individual regions' decision-making. In the Federal Government's view, there needs to be a sensible balance between raw materials extraction and other land uses such as housing construction, infrastructure planning and the various categories of nature and environmental protection.

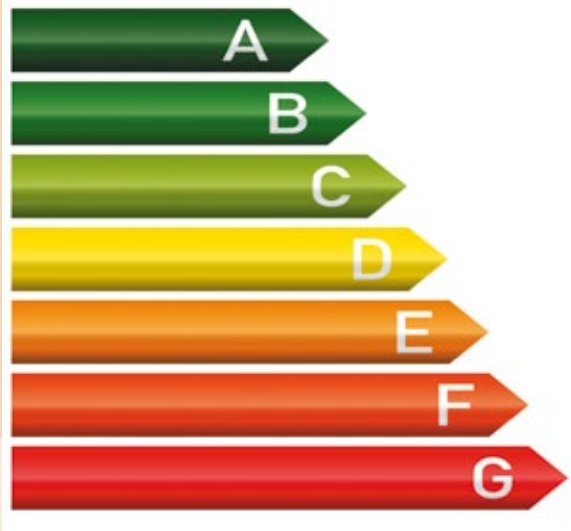
The German Government believes it is necessary to involve all stakeholders in efforts to find ways in which the major known deposits can be exploited while respecting other land uses. To this end there needs to be a constant dialogue with the responsible agencies in the Länder. The raw materials industry itself has a special role to play in this context. Against this background, and in the interest of output and jobs in Germany, the Länder should take the need to secure raw materials supplies into consideration in their spatial planning. In this context equal attention must be paid to the economic, ecological and social aspects of the National Sustainability Strategy and the National Biodiversity Strategy.



At the same time, however, these competing interests offer the prospect of solutions to the mutual benefit of existing competitors. In concrete terms this means that it is possible to secure industry's raw materials supplies and enhance the regions' economic performance whilst respecting their regional environmental and social policy objectives. Landscape design, recreation and leisure, environmental biotopes and raw materials extraction, combined with the creation of additional jobs, are not necessarily contradictory goals. Quite the contrary: entirely in keeping with the fundamental three-prong approach of the sustainability concept – economic, ecological and social aspects – they can be brought together to ensure a balance of interests.

With this in view the German Government has already responded to proposals from the Conference of Economics Ministers and has asked the Economics Ministers of the Länder to implement the recommendations for action presented by the Federation-Länder Soil Research Committee to improve raw materials extraction in Germany in cooperation with the other relevant ministries of the Länder.

5 Raw materials efficiency



Sustainable extraction of raw materials means not only extracting raw materials in an environmentally sound manner, but also making the best possible use of existing raw materials potential. The preconditions for this are the application of cutting-edge findings from mineral deposits research, the use of modern mining extraction technologies and the further development of ore recovery and processing technologies.

The German Government supports relevant R&D activities through the institutional promotion of scientific institutions. In addition to the work carried out in particular by the Federal Institute for Geosciences and Natural Resources (BGR), the Federal Ministry of Education and Research (BMBF) is planning to establish a new resource technology institute within the Helmholtz Association which will research and develop efficient raw materials technologies.

Moreover, the German Government is urging the Länder to strengthen the faculties dealing in geosciences, raw materials and mining at their higher education institutions. In particular, special importance must once again be attached to the training of highly-skilled young scientists in these fields so that the future challenges of securing raw materials supplies can be met.

6 Recycling

Returning the secondary raw materials contained in waste to the cycle of resources is an important element of sustainable resource management. Germany plays a pioneering role here at both European and global level. A breakthrough came in 1996 with the Closed Substance Cycle and Waste Management Act, which links product responsibility and resource protection; together with the product-related regulations on packaging, batteries, end-of-life vehicles and discarded electrical/electronic goods, it created the regulatory framework for resource-efficient economic activity. The pretreatment requirement in force since June 2005 for biodegradable (municipal) waste containing organic material prior to landfilling has made a major contribution towards closing substance cycles by bringing about an increased separation and thus a better use of recyclable materials from waste.

For some materials – copper, for instance – Germany has the highest recycling rate in the world (D 54%; EU 45%, USA 41%, world 13%). The German recycling rates for other major raw materials are 35% for aluminium, 59% for lead, 90% for steel, 20 to 25% for cobalt and 10% for molybdenum. Germany's use of secondary raw materials also reaches impressive levels: from 45% for steel up to as much as 94% for glass. The recovery rates for the main flows of waste are all well over 60%, whereas for construction and demolition waste they reach 88%. 92.3% of end-of-life vehicles is recycled, and the recycling rates for packaging waste range from 68% up to 93% depending on the material.

Existing residential buildings which are no longer in use are also potential sources of secondary raw materials. For example, the building stock of cities and municipalities alone provides approx. 10.5 billion tonnes of mineral construction materials (tiles, concrete, etc.) and 100 million tonnes of metals which are available as secondary raw materials following demolition work (for instance because of vacancy). And this store of materials is likely to keep growing (20% by 2020). Even now the recovery of raw materials from building stock is a major issue when it comes to resources. A number of research projects are currently collecting data on this, and concrete measures for the use of available secondary raw materials sources will be developed on the basis of their findings.



With the ongoing amendment to the Closed Substance Cycle and Waste Management Act, the German Government will further improve the framework conditions for returning reusable materials contained in waste to the economic cycle and will implement and continue moves towards the recycling society launched with the EU Waste Framework Directive of November 2008. This is expected to improve recycling in particular through the implementation of the new, five-stage waste hierarchy and the stipulation of minimum rates for the recycling of domestic waste and the recovery of mineral waste. The ongoing interministerial co-ordination process will decide whether and to what extent the rates will exceed the minimum requirements of the Directive. Also, the marketability of secondary raw materials will be improved by the rules on by-products and the definition of waste. The distribution of responsibilities between the municipal and private-sector waste disposal industry is to be specified in greater depth and in compliance with EU rules, and this is intended to improve legal certainty for the relevant companies and the basis on which they plan.

Rules on utilising the potentially recyclable materials in general waste are also to be improved during this period of legislation. In this context, the Federal Government is currently examining the possibilities of a revision of the Packaging Ordinance to make it a Recyclable Materials Ordinance, and is considering

the nation-wide introduction of a “dry recyclable materials bin”. The new Closed Substance Cycle and Waste Act is to put the necessary legal basis in place so that, once the current research project on the “recyclable materials bin” has been evaluated, specific rules can be adopted on the design of near-residential collection of recyclable materials, and in particular on the content, financing and organisation of a “recyclable materials bin”. The aim is to extend the successful approach already in place regarding sales packaging to the collection, sorting and re-use of the recyclable materials contained in general waste.

7 Raw materials in the value chain

In an increasingly globalised business world, the processing of raw materials throughout the value chain from the raw material to the final product is increasingly based on a division of labour. It is not necessary to have all stages of the value chain and the corresponding industrial facilities for every type or group of raw materials present in every industrial country.

However, experience of the past years and decades has shown that integrated industrial structures with a great depth of manufacturing are less crisis-prone. That is why it is in Germany's interest as an industrial and high-tech location to have its own industrial raw materials processing capacities for major raw materials or groups of raw materials. These face international competition and must therefore be constantly optimised. So maintaining our own raw materials processing facilities in Germany contributes substantially not only to output but also to technological progress.

In recent years a large number of German raw materials processing capacities have been closed down or relocated abroad. The reasons for this include high energy costs, but also comparatively high environmental standards and high wage costs.

A sustainable raw materials policy also means making sure that Germany remains internationally competitive as an industrial and high-tech location in the interest of future generations. The Federal Government will therefore seek to ensure that raw materials processing remains possible in Germany with due respect to environmental and social policy objectives and that it is further developed with the support of R&D to meet the needs of the future. The Federal Government will analyse concrete problem areas in a dialogue with business. National and European regulations may need to be evaluated and adapted or further developed in the light of new technological developments and economic factors.

8 Materials efficiency

1. Improving materials efficiency

It is the Federal Government's belief that improving material efficiency can play an important part in enhancing companies' competitiveness, in further reducing the use of resources in Germany and thus in protecting resources and minimising environmental pollution. For this reason the Federal Ministries' programmes are to be further developed in a target-oriented manner.

The Federal Economics Ministry will restructure the support available for company-specific advisory services to improve the materials efficiency of SMEs in order to make it more effective. The annual presentation of the Materials Efficiency Prize by the Federal Economics Ministry is to be optimised in order to increase awareness within German industry of the positive economic and ecological effects of improving efficiency in the use of raw materials and materials.

In December 2010 the Federal Environment Ministry, the Federal Economics Ministry and the Federal Research Ministry, in cooperation with the Federation of German Industries, will run a workshop on issues relating to raw materials efficiency. Examples of best practice will be discussed and made available to interested expert circles.

The Federal Environment Ministry is currently developing a national resource efficiency programme aimed in particular at minimising damage to environmental media caused by raw materials extraction and processing. There are plans in this connection to better network the relevant programmes and projects of the various Federal institutions and, where appropriate, to incorporate the results of projects carried out by other institutions. The Federal Government hopes to reach a decision on this programme in good time for the UN Conference on Sustainable Development (Rio plus 20) in May 2012.

2. Supporting efficient production techniques

Since 1979, within the scope of its Environmental Innovation Programme, the Federal Environment Ministry has been promoting exemplary efficiency projects, particularly in SMEs. Innovative recycling technology for the international market is supported

inter alia under the Recycling and Efficiency Technologies (RETech) export initiative. The establishment of the Centre for Resource Efficiency (ZRE) in cooperation with VDI The Association of Engineers created an information exchange for corporate advice and a “technology radar” for efficiency technologies. Since 2007 the Resource Efficiency Network initiated by the Federal Environment Ministry has been successfully promoting the exchange of know-how among companies, scientists, multipliers and associations.

In addition to the improvement of existing technologies, the development of new technologies is the key to a further increase in materials efficiency. The Federal Economics Ministry promotes this with its non-technology-specific programmes. Within the scope of the innovative programme to promote collaborative industrial research and the Central Innovation Programme for SMEs (ZIM), the Ministry makes available substantial funding for research into and the use of resource-efficient technologies and materials as well as for substitution and recycling.

3. Research and development

New or improved materials and chemical processes offer great potential for industrial processes at all levels of the value chain, generating substantially improved performance with reduced consumption of energy and material resources. Resource efficiency is therefore a core field for action under the Federal Ministry of Education and Research’s framework programme WING (Materials Innovations for Industry and Society). New material-specific approaches are intended to reduce dependence on strategic metals and increase specific material yields. In addition, there are moves to develop improved surface protection systems and new materials with considerably improved anti-corrosion qualities in order to extend the lifetime of construction elements and plant and to improve the efficiency of energy production plants. A further focus is to be on securing raw materials supplies through new catalytic converters adapted to the shift in raw materials and on intensifying chemical processes.

Projects managed by the Innovation Alliance entitled “Carbon nano materials conquer markets – CNT” have produced good results, e. g. in reinforcing



the structure of helmets whilst reducing weight, or in carbon-fibre reinforced plastics for rotor blades of wind power facilities.

A consistent use of lightweight construction also helps to promote sustainable economic activity, and offers advantages when the reduced weight of the material can save energy or power or can improve acceleration. For this reason, the Federal Research Ministry is promoting projects on “Multimaterial systems – future lightweight construction methods for resource-conserving mobility”. Lightweight construction methods will continue to be of great significance for all transport technology systems. Here, a major role is played by customised combinations of materials and the further development of the necessary joining technologies. The use of nano technologies can improve materials efficiency. Examples include modern concrete materials, steels and other metals which have the same or improved characteristics compared with conventional materials. Nano technology makes alternative production processes possible in production technology and chemicals, consuming less energy and raw materials.

One central objective of innovation policy in the Federal Government’s High-Tech Strategy is the promotion of cutting-edge technology to improve resource efficiency. The Federal Research Ministry’s Framework Programme entitled “Research for sus-



tainable development” cites the issue of “Sustainable business activity and resources” as one of five central fields of action. Here, support is given to the following measures:

- ▶ Enhancing raw materials productivity in high-input industries, such as the steel industry (support measure “Innovative technologies for resource efficiency – raw materials-intensive production processes r²”).
- ▶ Support initiative “Innovative SMEs: resource and energy efficiency”.
- ▶ Support priority “Technologies for sustainability and climate protection – chemical processes and material usage of carbon dioxide”: These provide support for industry-related research projects, e. g. to protect the climate and to broaden the base of raw materials and thereby to conserve fossil resources (part of the “getting away from oil” approach).
- ▶ Co-operation with emerging economies is another important priority here: The “CLIENT” support measure promotes co-operation on R&D, e.g. in the field of sustainable resource use and climate protection.

- ▶ The Research Ministry is currently preparing a new support measure on the sustainable use of strategically relevant raw materials. In this way, sustainability research aims to make a contribution towards security of supply of rare raw materials for key technologies in Germany.

- ▶ The intelligent and efficient use of natural resources is also being prepared as a further support measure. Here, new material-specific approaches are to generate substitution strategies in order to reduce the level of dependency on critical metals.

As a further contribution to research into raw materials, a research project funded jointly by the Research and Environment Ministries is investigating the extraction of phosphate as a mineral fertiliser from secondary phosphate sources such as sewage sludge or animal meal. The findings may be able to help reduce import dependencies and the pollution associated with the extraction of phosphate from natural resources.

The Federal Government takes the view that the substitution of critical or problematic raw materials is of great and growing significance. If new possibilities for substitution are to be developed, there must be an increased focus of materials-related R&D work on resource-intensive applications in particular. In the longer term, substitution helps to flexibilise the input of materials into the processing stages of the production chain, and it makes it possible to counteract shortages and disruptions to the physical supply, and to promote sustainability through the use of economically and environmentally advantageous materials.

9 Promotion of vocational training for foreign skilled workers and managers in the raw materials sector



When working abroad in the raw materials sector it is useful for German firms to have recourse to local skilled labour trained in Germany. The deployment of such skilled workers lowers the barriers to market entry, since it is easier to fill in gaps in information, to overcome difficulties with identifying appropriate partners, and to reduce intercultural barriers.

At the same time, thousands of foreign students complete their training at German educational institutions each year, largely funded by the Federal Government, and return to their countries as highly qualified skilled workers and future managers in order to make use of the knowledge they have acquired. Their stay in Germany is likely to have opened their minds to German interests.

In order to support the supply of raw materials to German industry, the Federal Government will include the raw materials sector in appropriate education and training programmes and grants. The education and

training of skilled workers and managers is to be given even greater weight in the case of projects of the mining colleges and other scientific institutions active in geosciences and raw materials research and at the Federal Institute for Geosciences and Natural Resources.

10

Significance of derivatives and financial issues in trade in raw materials



The rising demand for raw materials in the fast growing emerging economies, and the unexpectedly rapid economic recovery, are creating increasing scarcity of raw materials on the market. Further to this, concentration tendencies on the supply side of raw materials are tending to drive prices upwards.

The rising volatility of prices on the raw materials market is increasingly causing uncertainty in corporate planning and increased costs for companies. The prices for raw materials dropped for a time due to the economic and financial crisis. They have been rising again since mid-2009. The Federal Government takes the view that market-led processes (e. g. price negotiations between extractors and manufacturers) should not be influenced by government.

At the same time, raw materials have increasingly become the focus of the financial sector as a form of investment. The volume of futures being traded far exceeds the physical size of the market. However, it is necessary to take a differentiated view of such transactions. As long as speculation is restricted to providing liquid spot and future trading, it can help foster the formation of prices. In contrast, if massive excess speculation loses sight of the link to the real economy and the price development on the stock exchange becomes decoupled from the fundamentals of the respective raw materials market, there is a danger that real growth and employment will suffer.

The Federal Government will ensure that the relevant national authorities continue to pay close attention to the development of the market structure in the raw materials sector in terms of competition

law. In order to better estimate longer-term price formation on the raw materials market, government and commerce should work together to improve transparency in the raw materials sector, particularly in terms of financial transactions and physical stocks for users and supervisory bodies. In this context, the Federal Government supports in principle corresponding initiatives from the European Commission and efforts to co-operate more closely on improving the functioning of raw materials markets at international, and especially at G20 level.

With regard to the forthcoming EU financial market rules, the Federal Government will engage in a close dialogue with the business community as it prepares the German position for the European Commission. The aim here is to avoid possible negative effects of regulation (e.g. on the international competitiveness of German companies).

11

Structural measures

1. German Mineral Resources Agency

On 4 October 2010, the Economics Ministry established the German Mineral Resources Agency in the Federal Institute for Geosciences and Natural Resources. The agency has been given the following main tasks:

- ▶ Establishment of a raw materials information system: this is intended to improve transparency on the raw materials markets. In this way, German industry can place its efforts to secure access to raw materials on a more reliable basis.
- ▶ Tailored advice and support for companies and business associations: support should go to SMEs in particular as they reduce their raw materials supply risks, diversify their sources of raw materials, participate in projects to explore for or extract raw materials, and apply efficient processes for extracting and processing raw materials.
- ▶ Specialist support for the Federal Government on setting up and implementing assistance programmes in the fields of exploring for and extracting raw materials, and of raw materials and materials efficiency; this includes the specialist assessment of applications for guarantees for untied financial loans for raw materials projects.
- ▶ Research and development projects at the pre-industrial stage: fresh potential for raw materials is to be studied and new instruments and methods for raw materials and mining developed.
- ▶ Co-operation with countries rich in raw materials: the Mineral Resources Agency will enter into contacts and aim to develop co-operation in the raw materials sector. With regard to co-operation with developing countries, the Mineral Resources Agency – in close co-operation with the Federal Ministry for Economic Co-operation – will attach special significance to the sustainable use of the respective raw materials potential.

Further to this, the German Mineral Resources Agency – in co-operation with the State Geological Services of the Länder – will analyse the potential for shale gas in Germany in the coming years. In conjunction with the development of environmentally friendly extraction



methods, shale gas could help to promote a lasting supply of energy in Germany.

2. Resource technology institute in the east of Germany

In view of its centuries-old mining tradition, its expertise in the processing of raw materials, its comprehensive set of mining laws and its recent success – recognised worldwide – in the closure and rehabilitation of old mining areas, Germany is a global technological pioneer. This position needs to be maintained and improved further.

In line with the Coalition Agreement, the Federal Government will support and strengthen the R&D work on raw materials by establishing a new Research Institute for Resource Technology as part of the Helmholtz Association. Proposed concepts for this are currently being evaluated. Work on setting up the institute is to commence in 2011.

3. Interministerial Committee on Raw Materials

The Interministerial Committee on Raw Materials, which was established in 2007 with the involvement of the Federation of German Industries, has worked well and will be continued. In future, the German Mineral Resources Agency will be represented on the Committee and will report regularly on current developments in the raw materials sector.

12 Political backing

As a technological leader, Germany faces global competition to obtain raw materials. The Federal Government provides political backing to help ensure that German companies enjoy the same preconditions on the international commodities markets as their rivals. Germany has a global network of dedicated contact and information points to support its national economic interests abroad, consisting of the Federal Foreign Office and its foreign missions, the bilateral chambers of commerce, and Germany Trade and Invest (GTAI). Numerous German firms make intensive and successful use of these key players in Germany's system of external economic support.

Political backing can work best when the Federal Government and the business community develop country-specific concepts for raw materials which clearly state Germany's interests in raw materials and which serve as a guideline for all stakeholders in the raw materials sector. To this end, the Federal Government will continue the systematic dialogue with German commerce. Here, it is important that the German raw materials industry develops specific projects, identifies needs for support, and communicates this in an appropriate form.

The relevant institutions' work includes efforts to secure a supply of raw materials for Germany, by:

- ▶ pooling the commercial and resource-related interests of the various German players and representing them in a unified manner via the foreign mission to the host government,
- ▶ actively advocating German commercial interests in relations with the host government, e. g. regarding the issuing of licences to explore and extract, supporting German firms on the spot as they develop foreign markets, and setting up contacts between policy-makers, business representatives and the business organisations of Germany and the host country. Companies of the respective host country seeking business opportunities with German can draw on the services of the bilateral chambers of commerce,
- ▶ reporting on current developments in the raw materials sector, on market opportunities and trends on foreign markets, including on raw materials deposits and their significance, and identifying potential investments for German firms.

13 Development co-operation



Developing and emerging economies also have deposits of numerous fossil and mineral raw materials which are much sought after on the world market. However, in many developing countries the wealth of such resources does not foster sustainable development. Problems are caused by extraction projects which damage the environment, which are characterised by poor working conditions, and which abuse human rights. A wealth of raw materials can also result in corruption; it can finance existing disputes or trigger new armed conflicts.

Nevertheless, a wealth of raw materials offers these countries enormous opportunities and potential to generate government revenue and finance for their sustainable development. This creates opportunities to build local infrastructure and commercial structures, to undertake further processing locally, to establish a domestic value chain, to generate a component supplier sector, and ultimately to diversify the economy. The government revenue from the raw materials sector can help to build up welfare systems (health and education) and can thus contribute to poverty reduction, not only via the labour market, but also via welfare benefits.

The development policy pursued by the Federal Government in the raw materials sector adheres to a holistic concept in the partner countries, as set out in the policy paper⁵ of February 2010. One of its main aims is to foster a responsible and transparent use of raw materials (good governance) and a sustainable raw materials industry which upholds human rights and complies with internationally recognised minimum social and environmental standards. This starts with a comprehensive cost-benefit analysis including externalised costs which particularly arise in the form of environmental damage or inhumane working conditions; it also covers the surveying of raw materials deposits, the issuing of licences and the conclusion of lease contracts; it goes on to the extraction and processing of raw materials, under socially and environmentally acceptable conditions; and it ranges from the closure and recultivation of mined areas to trading and revenue management and the recycling of the final product.

Here, it is vital to support and stabilise political, economic, social and environmental conditions which foster development in the partner countries by strengthening state institutions and civil society

⁵ BMZ Policy Paper: Mineral and Energy Resources as a Factor in Development

players. This creates reliable investment conditions for foreign and domestic companies in the partner countries. The German and European business community can usefully support this process.

Development policy measures by the Federal Government can help to create the policy framework for a pro-investment climate in the partner countries via the establishment of a stable and efficient raw materials sector and competent state players, and German commerce can also benefit from this. Vocational training for local skilled workers is a central element of development policy in this context.

A stable economic, social and environmental framework, as well as transparent financial flows and trading relationships, help to improve the conditions for investment. In the other direction, this opens up opportunities for German and European firms to make their own contributions to sustainable development in the producer countries.

For business, access to acceptable sources of and supply routes for raw materials is more than just a question of corporate social responsibility (CSR) or a competitive advantage: it is also increasingly necessary in order to minimise the risk of market entry barriers or to meet statutory requirements. Transparency and control are playing an increasingly important role in the raw materials sector; it is therefore important to further strengthen transparency initiatives (such as the Extractive Industries Transparency Initiative, EITI) and certification instruments.

In particular, the need for simple, low-cost, environmentally sound technologies in the field of modern mining technology and management and in the establishment of a recycling industry is generating a host of opportunities for German firms.

Development policy measures need to be anchored and implemented at various levels:

- ▶ Ministerial level: anchored in sector concepts and country strategies of the Federal Ministry of Economic Co-operation and Development and also in a targeted policy dialogue. Implementation in projects of bilateral co-operation.

- ▶ Federal Government level: In the case of co-operation with science and research, networking of applied raw materials research, especially regarding extraction, processing, efficiency, and secondary raw materials and recycling.

- ▶ EU level: coherent approach by all European donors in the context of the EU raw materials initiative and in harmony with the Accra Accord, i. e. fostering economic and social progress in the developing countries in the context of increasing globalisation.

- ▶ Business level: Achieving of mutually beneficial effects by linking development policy objectives with specific commercial raw materials partnerships.

14 Bilateral raw materials partnerships



The safeguarding of raw materials cannot be a one-way street. It is important to establish a reasonable balance between the interests of the countries that produce raw materials and the countries (like Germany) that import them, and to develop this in the interest of mutual advantages.

For this reason, the Federal Government aims to establish raw materials partnerships with various producer countries. The Federal Government has already developed substantial ideas for this: its approach closely integrates foreign, economic and development objectives. However, the partnerships cannot function without specific commitments by German commerce. It is now up to German firms to develop specific raw materials projects and to implement them in the respective countries. The projects should help to safeguard Germany's supply of raw materials and to foster economic development in the partner country.

The raw materials partnerships can pursue the following aims in particular in the partner countries:

- ▶ to make a contribution towards modernising the raw materials sector and to help alleviate a back-log of investment;
- ▶ to create possibilities to attract a downstream processing industry with a view to sustainable development;
- ▶ to create new jobs in the raw materials sector;
- ▶ to provide support with staff training;
- ▶ to offer assistance with the systematic development of new deposits;
- ▶ to establish transparency of financial movements and trading chains;
- ▶ to promote the introduction of an effective fiscal policy which takes account of the strong price fluctuations on the raw materials markets;
- ▶ to provide support on compliance with environmental and social standards and on improving the legal framework; and
- ▶ to facilitate the transfer of knowledge via scientific and technical co-operation.

15 European policy on raw materials

As mentioned in the preliminary remarks, the European Commission presented a Communication outlining a raw materials initiative in November 2008 following detailed discussions with experts from the member states of the Community. Basically, the core elements of the initiative consist of three pillars:

- ▶ reducing trade barriers and distortions of competition,
- ▶ a stronger orientation of development co-operation towards the raw materials interests of the Community's industries, and
- ▶ promoting recycling, materials efficiency and substitution.

Further to this, the European Commission's initiative aims at improvements in the licensing procedures of the member states' extractive industries and a better data basis for raw materials in the Community by strengthening and networking the State Geological Services.

The Federal Government expressly welcomed the European Commission's raw materials initiative and is supporting the Commission services in its implementation. On the basis of expert reports and surveys of the member states, the European Commission is currently working on another Communication to be adopted by the Competitiveness Council at the end of 2010. This Communication aims to anchor the EU's raw materials policy in the EU's 2020 Strategy and to initiate a series of further specific measures and discussion processes with the member states.



The Federal Government is supporting the European Commission's efforts to further improve the supply of raw materials to the Community's industries. This is of especial importance in fields for which the Commission is responsible in any case, such as trade policy, or in issues which can be better and more forcefully represented by the European Union. In the light of this, the Federal Government will continue to advocate a close integration of its national raw materials strategy with EU raw materials policy.

Furthermore, the Federal Government wishes to see EU research policy giving greater priority to research on raw materials with a view to the sustainable upholding of the competitiveness of the Community's industries. This is of especial significance in the case of key forward-looking technologies. Corresponding ideas and concepts are being fed into the preparation of the 8th Research Framework Programme at an early stage.

16 Raw materials policy in the international context

A secure and sustainable supply of raw materials which is as transparent as possible is of outstanding significance for a stable development of the global economy. Raw materials provide an indispensable basis for downstream industrial production and are a prerequisite for growth and jobs in industrial, emerging and developing economies. The World Trade Organisation (WTO) highlighted this in the latest World Trade Report.

To a large degree, Germany's economic performance depends on the availability of key raw materials. For this reason, the safeguarding of the supply of raw materials needs to be backed by a committed foreign policy, external economic policy and development co-operation policy.

During its G8 Presidency in 2007, Germany placed the issue of raw materials policy on the international agenda. In view of recent developments in the international raw materials sector and the significance for the global economy, Germany will advocate that the G20 take up the issue. Open raw materials markets, the environmentally compatible extraction of raw materials, and the increase in welfare due to enhanced transparency, as a contribution towards economic development, are also significant issues for the G20.

Since the G8 summit in Heiligendamm in particular, Germany has been supporting efforts to enhance the transparency of financial flows related to the search for and extraction of minerals via the Extractive Industries Transparency Initiative (EITI). This is also an element of the development policy measures presented in Chapter 13 above. The countries participating in the EITI commit themselves to disclose state revenues deriving from raw materials and payments by oil and mining firms. The Federal Government is providing political and financial support for the initiative, and is also backing it in the context of bilateral technical co-operation projects in resource-rich countries in Africa (e.g. in Ghana, DR Congo, Liberia, Sierra Leone).


Further to this, in 2007 the G8 states issued a call in Heiligendamm for a responsible handling of production and exports and for greater transparency in the raw materials sector and for the implementation of certification of mineral resources in a pilot project.

This project is financed equally by the Federal Ministry of Economics and Technology and the Federal Ministry of Economic Co-operation and Development, and is being implemented in Rwanda. Also, the Federal Institute of Geosciences and Raw Materials has developed a robust, standardised fingerprinting procedure for coltan and a concept for anchoring this approach internationally. This procedure puts in place a key element in the establishment of a certification system for raw materials.

At present, issues of relevance to raw materials and partial aspects of this are being placed in the G20 Energy Expert Group. This includes, for example, energy price volatility, subsidies for fossil fuels, price speculation on raw materials, and the initiative recently introduced by the Russian side on Global Marine Environment Protection (GMEP).

Further to this, the Federal Government will continue to actively support the analytical activities of the OECD in the field of raw materials (e.g. the establishment of a database on trade restrictions in the international raw materials sector).

The UN Conference on Sustainable Development (Rio plus 20), which is taking place in Rio de Janeiro in 2012 at the level of heads of state and government, will be a significant event at multilateral level at which raw materials and resource efficiency will play a major role. One major issue at the conference will be the extent to which the transformation to a green economy can be achieved in the context of sustainable development and poverty reduction, whilst taking account of the different stages of development of the countries. Not least, the focus will be on how raw materials productivity can be increased in the developing countries in particular, in tandem with expanding economic output, and how the consumption of raw materials can be reduced.



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