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Sustainable Prevention of Resource Conflicts

Policy and Research Recommendations (Report 5)

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Sustainable Prevention of Resource Conflicts

Policy and Resarch Recommendations (Report 5)

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List of abbreviations

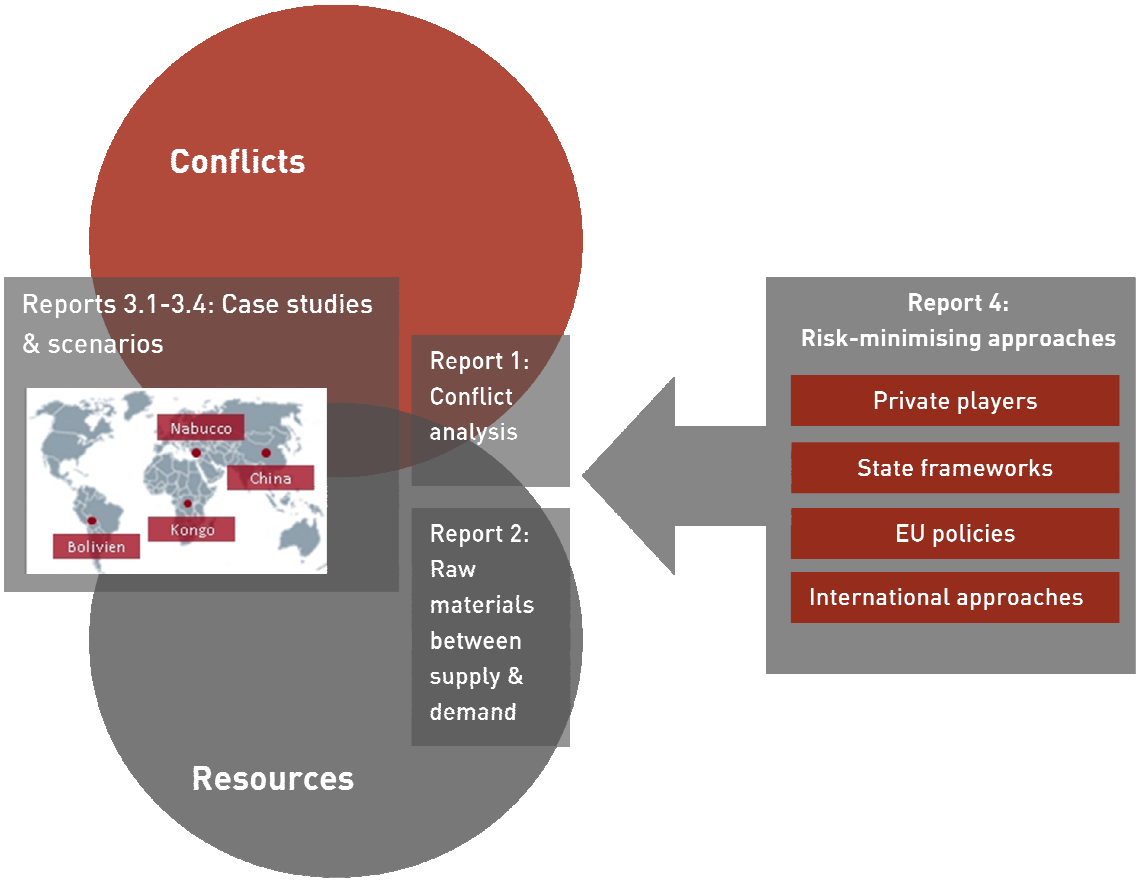
AfDB	African Development Bank
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
CSR	Corporate Social Responsibility
DR Kongo	Democratic Republic of the Congo
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EU	European Union
OECD	Organisation for Economic Cooperation and Development
UBA	Fedral Environment Agency
USA	United States of America

1 Sustainable prevention of resource conflicts

Raw material conflict occurs in various forms: in the form of supply bottlenecks and crises, violent disputes, or even war; as well as due to the effects of environmental destruction, whereby the sources of people's livelihoods are lost. Raw material conflict is a reality in many instances, but in others is merely postulated. On the one hand, the nature, strategic importance and price of raw materials influence potential conflict constellations. On the other hand, much depends on the management and governance of raw material resources and production, material flows, value creation chains and sources of financing, across a variety of levels. Existing research into raw material conflict in the field of oil, gas and valuable minerals reveals the multi-layered complexity of the issue as well as the necessity and possibilities of avoiding such conflict in a sustainable manner over the long term.

This research landscape was the starting point for the study by adelphi and the Wuppertal Institute titled "Sustainable Prevention of Resource Conflicts: Identifying and reducing international conflict risk relating to access to and use of raw materials". The project has added to existing research and delivered new perspectives in relation to lithium and rare earths – resources which are of special relevance for future energy supply and planning – with a view to developing renewable energy sources and meeting ambitious climate protection goals. This report summarises the results of the research project and sets out recommendations. The project was sponsored by the German Federal Environmental Agency, and was conducted in the period between July 2008 and September 2010. The results are published in a total of eight reports which are briefly summarised here.

Graphik 1: Overview of reports from the research project: Sustainable Prevention of Resource Conflict



In report 1 adelphi sets out the theoretical and conceptual framework for classifying present and future raw material conflicts. A range of conflict risks arise from the over-arching relationships between the various players involved and from the prevailing political, economic, social and ecological conditions. In this context the study focuses particularly on wider social crises and potential escalation resulting from the management of raw materials in producer, transit and consumer countries.

Of the various conflict constellations under analysis in which raw materials play a major role, three in particular need to be highlighted. Firstly, raw material shortages – both structural and relative – engender risks primarily within and between producer, transit and consumer countries. Oversupply of raw materials can also pose a risk to producers resulting from falling prices and declining markets. Secondly, crisis and conflict risks in producer countries are manifested in violent conflict, thereby presenting a major obstacle to development. This phenomenon, widely termed the 'resource curse', can also have negative effects for consumers if strategic resources are in short supply. Ultimately, environmental risks can lead to violent tendencies especially at local level in producer and transit countries. Such risks arise from overstretched eco-systems as a result of pollution, resource degradation and over-exploitation, as well as from the associated loss of biodiversity. If it does not prove possible to identify and restrict the conflicting interests within the three

aforementioned constellations at an early stage, the extent and intensity of conflict may increase significantly. Escalation into war between nation-states represents more of an exception thus far however.

Between supply and demand

The second report (2), coordinated by the Wuppertal Institute, considers the current and likely future situation with regard to supplies of energy and non-energy raw materials. It undertakes a detailed analysis of the potential raw material supply scenario. The study not only considers technical aspects and trends, but above all investigates available natural raw material quantities. Those quantities are subject to controversial debate. A further dimension is the possible trend in absolute demand for raw materials and the challenge of balancing that demand with the potential supply. It proves difficult to make any robust forecast as to trends in this context. With regard to energy raw materials alone, the situation is extremely diverse: Whereas supplies of natural gas globally appear to be assured for at least two more decades, there are already today bottlenecks in the supply of oil. Supply bottlenecks in core fuels may occur relatively soon, even within the medium term (by around 2015-2020). Short-term shortages of non-energy raw materials such as rare earths are conceivable at least in principle, as only limited amounts of the total available resources have been exploited to date and demand is rising dynamically.

Between pipeline policy and resource curse

Thirdly, various conflict constellations were analysed on the basis of empirical case studies, and their future trends projected in a range of scenarios. The case of the Nabucco Pipeline (report 3.1) is symptomatic of a closely intermeshed international supply situation in which a large number of players – both nation-states and private corporations – are attempting to construct or to prevent the pipeline respectively, according to their own interests. In fact, the profitability of the Nabucco Pipeline depends on the future development of European natural gas consumption. The projection through to the year 2020 along the axes of cooperation-and-conflict and surplus-and-shortage (in this case of gas) throw up a variety of scenarios: If consumption does not rise strongly as in past years, and measures to save energy and diversify energy sources take effect, the Nabucco project might prove profitable. However, the EU regards the project as strategically important as a means of reducing its dependency on Russia for natural gas. If Europe suffers a shortage of natural gas, the Nabucco Pipeline would also be a key factor in terms of physical supply to Europe, apart from its geopolitical significance. If the Nabucco pipeline is built and supply levels increase, even producing a surplus of natural gas, it will have to operate under changed economic conditions. With a view to breaking the Russian monopoly in natural gas from regions to the east of the EU, in all possible supply scenarios it would make sense to construct the Nabucco Pipeline as a means of enhancing the EU's room for manoeuvre in foreign policy terms.

The Democratic Republic of Congo, from its earliest history through to most recent times, illustrates the close link between misuse of resources and violent conflict. This is also demonstrated by the case of copper and cobalt in the Democratic Republic of Congo as well as by the four scenarios for the year 2020 (see report 3.2): Particular risk

factors in terms of violent conflict are, firstly, the question as to how profits and losses from mining are distributed. Tensions can arise at both local and national level if the population at large, certain population groups or a specific region or province regards itself as being disadvantaged by the undertaking. Secondly, a number of escalation risks arise from the specific mining activities – that is to say, for example, where small-scale prospectors are driven out by industrial mine operations, or where the social and ecological effects have a major impact on the lives of the local populace.

There is a mutually influencing link between local conflict dynamics and international developments in this context: While fluctuations in international raw material prices continue to destabilise the fragile situation in Congo's copper belt, the scenarios indicate that, as in the past in eastern Congo, local violent conflicts may rapidly assume national and regional dimensions. Such an escalation would have negative consequences for global – and particularly European – supplies of cobalt, which is a key raw material for future technologies, and most especially in terms of humanitarian impact and hampering development prospects for the DR Congo. In this respect the scenarios emphasise the key role of the government in Kinshasa and of the international community in finally translating Congo's raw material wealth into development results.

New energies – new conflicts?

The case study and scenarios relating to Bolivia and lithium (report 3.3) are devoted to the potential risks linked to a raw material which will increase greatly in importance if there is a massive expansion in electro-mobility. While the establishment of lithium production would entail major development opportunities for one of the poorest countries in Latin America, the case study and four scenarios through to 2030 identified two main potential risks. Firstly, risks which might arise from the environmental consequences of developing industrial-scale lithium production. Destruction of natural habitats, emissions and water consumption would have a significant impact on the condition of the local populace, who make their living primarily from agriculture, tourism and harvesting salt from the salt flats. The population is capable of organising itself effectively in defence of its interests, and has engaged in resource conflicts in the past, so a conflict-sensitive approach is all the more important in this context.

The second identified risk is the fundamental dependence of the Bolivian economy on raw materials, and its consequent susceptibility to price shocks. This risk is primarily associated with gas at present. If there were to be massive development of lithium, it might be subject to the same dynamics. In two scenarios, this dependence in conjunction with severe price fluctuations on international markets leads to destabilisation of the political system in Bolivia. In those scenarios, due to falling revenues from raw material exports the state is no longer capable of adequately fulfilling its public service obligations. Both risks remain limited in their direct impact on Bolivia as a producer country. Only in a second step do these risks impact on the consumer countries, namely if local protests or a national destabilisation were to result in supply bottlenecks.

Rare earths are likewise relevant to environmental and future technologies. China currently accounts for 97 percent of global production. Consequently, importer

countries and regions are dependent on China's exports and prices (see report 3.4). In the case study, raw material conflicts were shown primarily along two main lines, and emphasised in the four scenarios for the year 2030: Firstly, if the affected local population groups defend themselves against the severe ecological impact of rare earth mining and production. Secondly, conflicts might arise if those who profit from the economic development (above all entrepreneurs or regional power-holders) undermine the traditional centralised party structures and expand their own influence.

Both these lines of conflict occur in China scenarios; international conflicts over access to Chinese rare earth resources, as are feared at present, do not dictate the picture. Instead, in some scenarios internal political tensions mean that China is not able to exploit its monopoly position to a foreign policy gain. In others, the government enters into multilateral agreements and thus does not develop a fundamentally confrontational raw materials related foreign policy. Ultimately, the actual rate of diffusion of environmental technologies in future and the development of new technologies relying less heavily on rare earths remain the key factors in determining whether relative shortages in global supply do in fact occur. Therefore, if industrialised nations and emerging economies commit to the same technologies in order to attain climate policy goals, international resource governance and coordinated promotion of (environmental) technology will also play a role in preventing conflict and crisis.

Approaches to risk reduction

A fourth report (4) analysed relevant, innovative approaches to minimising risk at various levels. Private players (business or non-governmental organisations), state-imposed frameworks, European and international approaches provide a broad range of different instruments for recording and managing the risks of raw material usage in terms of supply, security and crises, as well as with regard to ecological impact. The focus of most approaches, however, is on safeguarding raw material supplies to consumer countries, as a result of which they largely neglect potential conflict scenarios in producer countries, or indeed between producer, consumer and/or transit countries. Only a small number of approaches address all three risk constellations (supply, security and conflict risks, and negative ecological impact), namely:

- multi-stakeholder dialogues;
- national sustainability strategies;
- various regional strategies and climate and energy strategies of the EU; and
- international early-warning and notification systems.

Consequently, there are all-embracing approaches among players at all levels. However, they are 'soft' policy approaches entailing medium- to long-term effects. The following recommendations for action are derived in particular from the analysis of existing risk reduction approaches, the potential they offer and the gaps they leave (see report 4). The recommendations also seek to address potential future raw material conflicts.

Methodical approach

In addition to the research and analysis carried out by adelphi and Wuppertal Institute, two workshops were held to collate comments on the interim results of the study and to incorporate a broad spread of specialist expertise into the project. At the workshop held on June 29, 2009, some 15 raw materials experts and conflict and peace researchers discussed the interim results of the study (reports 1 – 3.2). At a workshop held from May 31 to June 1, 2010, scenarios relating to Bolivia and lithium and to rare earths and China were devised by interdisciplinary groups of experts (in raw materials and material flows, in the countries concerned (China/Bolivia), in peace and conflict research, from industry, etc.). At a concluding workshop on September 13 2010 in Berlin, the next results obtained were presented by the representatives from ministries and selected experts. Participants in particular discussed the report on approaches to risk reduction (report 4) and the following recommendations for action and research.

2 Recommended action

The results of the research project demonstrate that the multiplicity of potential solutions to resource conflicts certainly matches the complexity of the various constellations depicted (reports 1 – 3.4). Many policy approaches address those conflict constellations more or less directly (report 4). The approaches encompass concrete current policy strategies (Germany's Civil Crisis Prevention Action Plan, or the EU's Raw Materials Initiative) as well as incorporating detailed analysis of the prospects for future system changes, such as in the structures of raw material markets. Such systemic changes, in particular, would have a more fundamental influence on the identified conflict constellations than specialised approaches, which only ever address part of the complex structure of related factors. In the following recommendations we focus on a middle range between those two poles of transformation research. That is to say, we emphasise the strategies which, viewed in isolation, would not be capable of meeting all the challenges of future raw material conflict depicted. However, in conjunction with a step by step approach, they do represent a methodology which, based on intensified coordination among the key players, can make a far-reaching contribution to reducing risk and preventing conflict over the long term.

The main focus is on recommendations linked to current political debate and processes. Where relevant, emphasis is placed on the essential close interaction between policy-makers and the scientific community. The sequence of recommendations does not represent an order of priority.

The players particularly relevant to implementation are listed in the boxes relating to the respective recommendations. A particular challenge in this is the necessity to coordinate and interlink approaches across the various levels on which the different players operate. The boxes indicate the levels addressed by the respective recommendations, with the impetus coming ideally from the group listed first in each case. How international and cross-level coordination takes place in detail differs according to the recommendation and the associated action, and should be formulated by the respective lead players in the form of an implementation strategy.

2.1 Introduce systematic policy impact assessments

State frameworks

EU policies

Private players

Biofuels can serve as an example of how a strategy for resolving a risk constellation (use of low-carbon energy sources) can entail secondary problems of different kinds (shortage of food and lack of livelihood security, in the extreme case leading to violent escalation). In Germany and more widely across Europe, new policy goals and strategies for the development of renewable energy supply are currently being formulated in order to meet international targets for reducing greenhouse gases and respond to the high energy demands of business, industry and the population at large. To date, however, such processes have been conducted without regard to questions as to the effects of those policies and targets in the context of the various raw material conflict and risk constellations set forth in this project.

The EU has taken the first steps in this respect in the form of its Raw Materials Initiative and the identification of critical metals drawn up by a group of experts (June 2010). Furthermore, it has commissioned a small-scale research project to investigate the potential for bottlenecks in supply of minerals and raw materials essential to implementation of its goals (the European Strategic Energy Technology - SET Plan). These questions should also be considered by national decision-makers in the political and business realms if – as is currently the case – a national energy plan is to dictate projected energy and non-energy resource consumption over the coming decades and establish regulatory guidelines. In view of the remaining resource and conflict related uncertainties, there also needs to be close interlinking with scientific methods of risk analysis.

Against this background, the following measures appear prudent:

- Instruments for assessing the consequences of policies should be systematically established. There is a broad base of experience in assessing consequences available for this purpose within Germany. Furthermore, the methodology should be widened to encompass the consequences for international conflict applying to all OECD countries, which should be gradually expanded within the framework of the G20 also to include the emerging economies.
- The raw materials related implications of national energy plans should be reviewed. This should provide as detailed a specification as possible of the medium-term demand for raw materials in the green-tech sector and the possible source countries.
- Demand forecasts should be systematically linked to global risk analyses drawn up by an interdisciplinary assessment body. A body of this kind may be established in Germany within the framework of the Civil Crisis Prevention Action Plan.

- The urgently needed worldwide development of recycling capacities and incentives for resource-conserving design should likewise be linked to a systematic method of assessing potential consequences for producer and transit countries, many of whom are economically heavily dependent on raw material export and/or transit business. The information obtained from this assessment should be incorporated into bilateral channels of cooperation such as foreign trade or development cooperation, in order to contain the risk entailed by the consequences in those countries and support ways of bringing about sustainable development (see also below: Recommended research).

2.2 Increase transparency of raw material markets and value creation chains

International approaches

Fluctuations in raw material price and price shocks can play a major role in escalating resource conflicts. This is shown both by the past (see report 2 and report 3.2) and by the future as depicted in the scenarios (see report 3.3 for example). The most problematic are extreme price fluctuations (boom-and-bust cycles) which are caused less by actual shifts in supply and demand and more by excessive speculation. Too little is currently known about how raw material prices are set and what trading and speculation processes drive them.

EU policies

Moreover, there is a widespread lack information as to the origins of raw materials, which makes it difficult to identify the individual players on the various markets. The current situation in the wake of the financial crisis provides an opportunity also to ensure that raw material markets do not develop in an untransparent and uncontrolled way. The US Financial Reform Act passed in July 2010 illustrates how transparency can be improved, at least in part. It incorporates measures intended to prevent armed groups in the Democratic Republic of Congo from benefiting from trade in resources such as tantalum. In future many US firms will have to publish an annual report disclosing whether their products contain raw materials such as tin, tungsten or tantalum originating from Congo or one of its neighbouring countries. If they do, the companies concerned must indicate what they are doing to check the origins of the minerals they use. No concrete sanctions have as yet been adopted, although the International Conference on the Great Lakes Region (ICGLR), for example, is investigating how it can differentiate between conflict resources by means of certification systems. The Act also seeks to raise awareness among consumers about the conflict potentially linked to the everyday items they use.

State frameworks

In Germany, one of the key tasks of the new Raw Materials Agency will be "to create more market transparency". As a consequence of that remit, the new body will play a lead role in the field, tasked to systematically a) bring in external expertise, particularly

with regard to regional, conflict and peace studies and b) provide a channel for interlinking new approaches across Europe and internationally.

Accordingly, potential measures to enhance transparency on raw material markets include the following:

- Transparency on raw material markets should be enhanced by developing better and more transparent notification and early-warning systems and by introducing routine reporting duties in respect of material flows, including their ecological 'backpacks', and regarding the origins of raw materials. The development of a risk radar would be a means of attaining this (see Recommended research below). The EU member-states should help to establish relevant proof-of-origin schemes and investigate potential sanctions.
- The impact of pilot projects such as BGR certification of trading chains (including the 'Coltan Fingerprint') should be boosted. This could be effected by means of an additional label or monitoring of key points along value creation chain and material flows (such as tantalum smelting plants) as a way of documenting socially and environmentally sustainable mines, plants and trading stations.

2.3 Improve coherence of raw material policy

National and European raw material policies are largely developed without any linkage to security policy issues and vice versa. In order to reduce raw material conflicts, however, interdisciplinary methods and processes must be found. A good example in this context is the German Federal Government's inter-departmental Resources Group, particularly in its early inclusion of representatives from the Foreign Ministry and the Federal Ministry for Economic Cooperation and Development in devising a national resource strategy. At the time this research report was completed the strategy was in development under the lead coordination of the Federal Ministry of Economics and Technology. Such coordination – if implemented systematically and incorporating a range of different perspectives – can help to create greater coherence of timing and sectoral integration.

Other conflict-preventing instruments should also be coordinated and deployed so as to exploit their respective strengths. The development of the European Diplomatic Service in particular, and the resultant restructuring at European level, will provide an opportunity to establish systematically the dynamics and constellations of resource conflicts as a component element of the portfolio of new diplomats (particularly in risk countries).

Moreover, procedures could be defined as a rapid response to sudden crises and supply bottlenecks as and when necessary. The financial crisis and the crisis of the Euro which began in 2007 has thrown up processes for multilateral rapid-response decision-making within the EU. This and other experience might also be applied preventively in relation to raw material conflicts so as to ensure, for example, that the deployment of national raw material

EU policies

emergency action plans in times of crisis does not additionally destabilise the system or stir up unintended conflict.

Current developments in European and international notification and early-warning systems for raw materials might also be directed to make such systems usable for security and crisis prevention policy and, by return, might profit from existing social and regional policy and political science expertise in order to identify relative shortages more effectively (see report 4, part 5.3 and Recommended research).

State frameworks

At national level too, however, raw material supply policy is still insufficiently coordinated with crisis prevention efforts. For example, the methodology applied in attaining the goals of increasing raw material productivity has to date been little linked to raw material conflict, as it includes only direct raw material imports, but neither international inputs such as semi-finished and finished goods nor 'ecological backpacks'. The approaches set out by the Civil Crisis Prevention Action Plan might have a more marked effect if they received corresponding political and financial backing. National governments should also help to strengthen those policy approaches which deal with all three risk constellations (supply risks; security and conflict; negative environmental impact). Such approaches do exist (including early-warning and notification services, multi-stakeholder dialogues and sustainability strategies) but they are weak, and could be strengthened by political, financial and organisational backing (see report 4).

Potential measures to strengthen policy coherence include the following:

- Developing a risk radar may help – also with a view to the widespread application of future technologies – in identifying possible raw material shortages at an early stage. In this way, processes for the development of European and international notification and early-warning systems for raw materials should be supported while at the same time incorporating social science data.
- This requires close collaboration by policy-makers and business leaders with experts from the basic and applied research field. This dialogue should be linked to interdisciplinary crisis prevention approaches (such as the inter-departmental group working on the Civil Crisis Prevention Action Plan) in order to institutionalise regular interchange.
- National sustainability strategies, too, already provide an all-embracing method of managing the three risk constellations. The progress report on Germany's sustainability strategy should take into account how this policy framework can be utilised to incorporate concrete measures for the early identification and management of raw material conflicts. Expand the scope of raw material related foreign policy to include risk-reducing measures for producer and transit countries:

As raw material importers, the EU and national government frameworks, as well as the private sector, have developed strategies aimed at safeguarding raw material supplies, the current ongoing establishment of Raw Materials Agency in Germany underscore the strategic relevance of this. The focus in terms of raw material supply has to date been primarily domestic. Yet approaches targeted only at supplies from producer countries are too narrow to encompass the full spectrum of resource

conflict. Consequently, this inward focus should be systematically expanded to incorporate the exterior dimension of the country's own raw material supply: Relevant measures are at present insufficiently backed by development aid and cooperation policies. Such measures – including the development of capacity and technology in Bolivia, technology dialogue with China, development and environmental projects for small-scale mines and prospectors in Congo, etc. – would not only help attain other policy goals such as those of development policy, their conflict-reducing effects would also be useful in achieving the actual goals of raw materials related foreign policy.

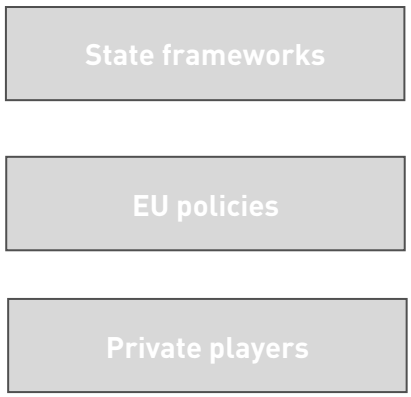
In this context, alongside the development policies and instruments of national governments there are also roles to play for the EU, as a major investor, and for the private sector in terms of corporate social responsibility (see below). Moreover, there is a lack of a unified international approach to sustainable resource management which manages the mining and transport of raw materials, through to the recycling stage, in a way which minimises conflict risk. An agreement of such a kind might unify social and environmental standards or norms worldwide and at the same time especially ensure that the influence of the EU and the USA on international resource management in relation to environmental policy is not diluted by agreements between (new) producer and consumer countries.

Potential measures to expand the scope of raw material policy include the following:

- Development of strategic environmental and raw material partnerships with key raw material producers. In this, it should also be ensured in relation to environmental technologies in cooperation with old and new producer countries that exploitation of raw materials is carried out in a manner which is sensitive to potential conflict as well as being socially and environmental sustainable. This may also be backed by sector-specific measures, such as in the automotive, metal and recycling industries. The Wuppertal Institute developed a proposal on this as part of the MaRess project sponsored by the German Federal Environmental Agency (UBA) and the Federal Environment Ministry (BMU).
- As part of such efforts, fragile, less developed raw material exporters should also be more closely integrated into international dialogue on raw material governance, such as by specially targeted training and capacity-building measures.
- This approach should be backed by measures to promote the rule of law and good governance, particularly focused on strengthening the capacities at sub-state and local level in order to implement cooperation in the most sustainable possible way.
- In devising its energy plan and raw material strategy, and in building up its Raw Materials Agency, Germany should ensure that this exterior dimension to national security of supply is adequately taken into account. To that end, the raw material strategy should, in the same way as commonly practised environmental risk assessments, stipulate obligatory peace and conflict assessments for raw material initiatives in fragile or conflict-affected countries.
- Furthermore, for the Rio+20 conference the German Federal Government should frame an international treaty or joint statement on sustainable resource management and agree its substance at an early stage with key producer,

consumer and transit countries in order to establish global social and environmental standards.

2.4 Demand and promote corporate social responsibility



The risk constellations entailed by resource conflict are reflected in various phases of the value creation chain, and affect a wide variety of private-sector players: from small mining entrepreneurs and local transport firms to large multinational corporations. The latter have increasingly sophisticated environmental standards and instruments at their disposal, though they often apply them differently in different contexts.

Internationally, the new ISO 26000 standard already includes a section on corporate social responsibility with regard to human rights which makes reference to the special circumstances surrounding violent conflicts, crises due to natural disaster and extraction-related activities which may possibly have significant environmental impact on water resources, forests, air quality and local communities. Companies are required to devote special attention to such contexts and, where necessary, implement enhanced due diligence procedures. The OECD recently issued its due diligence recommendations for mineral supply chains. The German Federal Government's CSR Action Plan, drawn up in line with the German Federal Government's CSR strategy, should not fall back behind the international standards, but rather be a framework to provide German businesses with clear guidelines for their conduct in relation to conflict-related raw materials and violent conflict.

A number of companies have already demonstrated awareness of their responsibilities by devising some innovative new approaches. The social effects of such approaches should be strengthened. For one thing, this might help to broaden their scope by way of sector-specific initiatives, through chambers of commerce etc., instead of being merely isolated single projects. If the guest and/or host government assumes the lead role in managing the issue, single short-term CSR measures might be translated into much broader contributions to good governance, provided businesses work continuously to embed them in their practices or expand them to a wider target group. In addition, political backing will help CSR managers to establish acceptance of the issues and processes relating to their portfolio within their companies.

Potential measures to promote corporate social responsibility include the following:

- A sustainable approach to raw materials governance, showing sensitivity to potential areas of conflict, should be an integral part of the German Federal Government's new CSR Action Plan.
- Multi-stakeholder forums (round-table discussions; codes of conduct; Global Compact Germany network, etc.) should also consider the issue of sustainable

prevention of resource conflicts, including the question of how that can be aided by constructing conflict-sensitive supply chains.

- Companies should be required to publish reports on the origins of critical raw materials used by them and their suppliers (based on the proposal set forth in the Wuppertal Institute's MaRess project and by the research centre of the Free University of Berlin on behalf of the German Federal Environmental Agency). They should also incorporate possibilities for enhancing resource efficiency into the design of their products, as well as carrying out more research into resource efficiency and recycling.
- An international platform should be established to disseminate information about and promote the use of secondary materials as well as to develop innovation in the associated material flows and build recycling capacities, including training for businesses in developing and emerging countries.

2.5 Environmental and social sustainability as a means of strengthening crisis and conflict prevention

International approaches

EU policies

Private players

Companies already have environmental standards and instruments at their disposal. As well as ensuring they are consistently implemented, it is also important to establish a systematic method to take account of social and conflict-related aspects in the raw materials sector. To ensure that business and policy-makers promote economic development in poor raw material exporting countries, and to avoid the presence of raw material resources becoming a curse, 'do-no-harm' principles should be obligatory in the mining sector. The new recommendations of the OECD regarding due diligence in mineral supply chains are a move in that direction. The revised OECD guidelines for multinational corporations currently undergoing revision might incorporate relevant mechanisms, and national offices might be provided with means of sanction. Multilateral development and investment banks (EIB, EBRD, AfDB, etc.) might also profit from an integrated approach combining crisis- and conflict-sensitive policies with existing environmental guidelines and protection measures.

State frameworks

In the consumer countries themselves, the environmental aspects potentially deriving from the development of environmental technologies should be subjected to systematic analysis. This applies to the establishment of recycling systems for lithium for example. Germany is already gathering early experience in the Lithorec project sponsored by the Federal Environment Ministry (BMU). [1] Further

[1] See www.lithorec.de.

experiences should be gathered and integrated into international cooperation agreements. The private sector should also be included in such undertakings. The possibilities for extensive recycling should be communicated to raw materials producers at an early stage, as negative social impact in mining regions needs to be avoided.

Not least, in the course of efforts to diversify their raw material sourcing consumer countries must ensure that compliance with environmental and social standards plays an integral role in building cooperation agreements with new suppliers.

Potential measures to promote environmental and social sustainability include the following:

- Awareness should be raised among players in the environmental technology sector (including solar cell and wind turbine manufacturers) of the environmental impact of raw materials exploration and the associated potential for conflict resulting from the activities of their suppliers. Likewise, efforts should be made to promote integration of environmental technologies in order to improve resource efficiency in raw materials extraction, and social concerns must also be incorporated (such as by campaigns in cooperation with the relevant NGOs).
- In cooperation with industry, certification of mines and production facilities or awards for particularly environmentally friendly processes/plants/manufacturers can be developed.
- Environmental and social standards should be integrated into value creation processes as central pillars of strategic environmental and raw material partnerships with key producers.
- Furthermore, new business models for vertical integration downstream should be investigated which ultimately, based integration with raw material production and recycling, would result in fully vertically integrated businesses. This is currently being investigated in the EU with regard to nickel.
- In the course of the current ongoing revision of OECD guidelines, the OECD's national office should be turned into an effective instrument against corporate wrongdoing, and should rigorously investigate justified complaints against German-based companies.

3 Recommended research

The research project was tasked to investigate a highly complex, multi-layered, interdisciplinary subject. Based on its broad scope, it has reaffirmed existing research as well as delivering new findings (see 1 above). At the same time, it became apparent in the course of the project that there remain substantial gaps in the research in some areas. This relates not only to the concrete **shaping of instruments** employed to reduce raw material conflict, it also extends to **fundamental aspects** which remain unknown, but which need to be clarified in order to attain a comprehensive understanding of the dynamics underlying conflict and the relevant solutions.

Interdisciplinary conflict and risk research is a key discipline which should be applied in devising conflict reduction strategies. However, detailed expertise is currently available only in isolated areas. This poses a challenge not only for political decision-makers in determining how such research can be more strongly developed. It also raises the question within the scientific community as to the respective contributions which can be made by different disciplines to such research.

In order to identify the possible interdependencies and dynamics of a) the raw material situation, b) the behaviour of the players involved, and c) the influence which can be exerted by instruments and strategies, **conflict scenarios relating to national and international politics need to be developed.** This needs to apply a broad interpretation of the term 'conflict', integrating a wide range of political elements and socio-economic and ecological parameters. Such scenarios should be expanded by scenarios depicting international cooperation.

The so-called '**green-tech**' technologies – that is, technologies aimed at utilising renewable energy and environmental protection technologies – **entail high demand for raw materials** which might possibly be in short supply, and/or need to be sourced from conflict regions, assuming the green-tech boom is sustained. However, the conditions under which this might result in **raw material shortages** and conflicts (growth channels, potential for raw material efficiency in green-tech manufacturing, etc.) so far remain unclear. These reciprocal influencing factors – limited green-tech production due to shortage of raw materials on the one hand and forced exploitation of already tight raw material resources due to rising demand for green-tech on the other – have to date only been touched upon. What can be said is that the scientific community remains a long way away from attaining a wide-reaching understanding of these interdependencies and from devising strategies to achieve potential solutions. The question as to the (unintended) consequences of policy framing and goal-setting in this context is likewise one which has been insufficiently considered to date. Basic and applied research is required in this field. Such research needs to incorporate intensive dialogue with experts from different disciplines (geologists, mechanical engineers, scenario plotters, etc.). This is something which was done in developing scenarios relating to Bolivia and China as part of this project, and was affirmed by the experts involved as being very fruitful. Such research is effective and helpful when its results are fed into corresponding roadmaps at political level.

Accordingly, a key recommendation is to instigate an **international research programme** on raw material conflict. In substance and methodology, this should address the points cited above. In this context, the research needs of raw material-intensive emerging and developing countries should be identified and incorporated into the findings. Over the coming years and decades those countries will fear a devaluation of their resources if international climate policy achieves its aim of reducing emissions of carbon and other greenhouse gases by at least 50 percent. In order to prevent dumping prior to enforcement of the relevant regulations, firstly research would have to be carried out into conflict analysis and, secondly, alternative development paths entailing sustainable extraction and use of energy sources and raw materials would have to be developed and tested. This would thus be an interdisciplinary and transdisciplinary research programme, involving especially institutions from emerging and developing countries. The Transatlantic Academy, a German-US research initiative based in Washington working on a project titled "The Competition for Natural Resources: The New Geopolitical Great Game?"[2] has made a first step in that direction; further steps would be desirable.

The **development of** so-called **risk radar** seems to be one of the most urgent challenges facing researchers and policy-makers. A radar of such a kind would identify potential raw material shortages at an early stage. This would require a fundamental improvement in the data relating to raw materials availability. A risk radar should also be considered as a means of creating risk profiles for future technologies. Conceivable variants are a "risk data sheet for technologies" and a "risk data sheet for industries", indicating which raw materials are essential to which technologies/in which industries and what efficiency potential might be exploited, as well as setting out approaches to raw material substitution for technology production. Operationally, it should be investigated whether such data sheets should rather be drawn up by the technology manufacturer or by the material producer, and how they need to be institutionalised within existing systems. The data sheet would also have to incorporate an assessment of the political, social and ecological situation in major and potential mining territories, and provide information on the key corporate players. Finally, such a data sheet should indicate potential unintended risks of future technologies as well as unintended risks relating to improved efficiency and possible substitute materials. The risk radar would need to incorporate numerous indicators, complete with weightings, and should be Web-based, so as to map changing trends in real time.

[2] See www.transatlanticacademy.org.

Good governance policies in raw material-rich developing countries have not been subjected to sufficient scientific study to date. Research in this context should be directed towards a comparative analysis of relatively successful countries (such as. Botswana, Chile), including their economic policies, as well as incorporating analysis of current crisis hotspots (such as Central Africa). Of particular interest to researchers in this context are the conditions under which environmental governance has a positive influence on good governance, as depicted in some scenarios (see report 3.4 China). Options for action, and the channels in which action should be directed, can be derived directly from such research questions. This should also focus particularly on questions relating to the optimum use of revenues from mining and to fiscal and foreign trade policy. It would be an opportunity, for example, if existing import duties on environmental goods were to be replaced gradually by levies on resources. The conditions dictating the success of raw material funds should also be investigated. In the medium term, a key factor will be how the reduction in use of fossil fuels and environmentally intensive primary materials targeted by climate and resource policy can be linked to development opportunities for raw material producing countries. Consequently, these considerations should also encompass international financing mechanisms (such as climate funds, GEF), international emissions trading and investment agreements.

With regard to international policy options and foreign trade policy, **risk-minimising strategies for business and policy-makers** should be subjected to academic investigation and relevant proposals drawn up. One relevant area of research in this context is the sphere of international cooperation, including Rio+20, WTO options (as detailed by the OECD in relation to trade barriers for critical metals) and regional strategies for the EU, East Asia and the USA.

The **private sector** has to date been primarily seen by researchers as a driver of conflict, but at the same time fragile states, especially, need capital investment, value creation and jobs. A better understanding of the role of the private sector with regard to all three identified risk constellations (security of supply; security and conflict; and negative environmental impact) would also help to adjust the policy framework so as to support business in minimising conflict risk. In Germany and the wider EU, this relates to the responsibility of companies by way of direct investments and the management of their value creation chains. Only if the potential and actual means for the private sector to exert influence on raw material conflicts, and the conditions under which they can assume responsibility and contribute to good governance, are better understood can they also be integrated into strategies for achieving solutions.