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Wuppertal Institute for Climate, Environment and Energy

**Summary of the Speeches and Discussions
at the Major MaRes Conference on
“Resource Efficiency –
A Motor for Green Growth”
on 5 October 2010 in Berlin**

**&
Executive Summary**

Summary report of the Major MaRes Conference on
“Resource Efficiency – A Motor for Green Growth” (Task 8)
within the framework of the „Material Efficiency and Resource
Conservation“ (MaRes) Project



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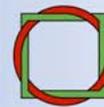
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More information about the project

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you will find on www.ressourcen.wupperinst.org

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Summary of the Speeches and Discussions at the Major MaRes Conference on “Resource Efficiency – A Motor for Green Growth” on 5 October 2010 in Berlin

1 Resource Efficiency: A Leading Policy Issue in Germany

Climate protection and anticipated long-term rises in energy prices have led to increasing public approval for measures to save energy and promote energy efficiency. A willingness in principle to use energy more efficiently can now be observed among all social groups. For many years the same could not be said, however, of the much broader issue of resource efficiency and resource conservation. Even today, many people are still unaware of the sometimes disastrous ecological and social consequences of extracting raw materials, while the effects of price developments are usually not felt directly by the general public. Even when the prices of raw materials soared to exorbitant levels prior to the global financial crisis, end users were not nearly as affected as they were by the price rises for petrol and heating oil that resulted from the increase in the price of oil. Resource efficiency was therefore an issue that for a long time received little public attention. This is now beginning to change.

For manufacturing industries the availability of raw materials (raw materials security) has always been a matter of considerable strategic importance. In many sectors – particularly hi-tech clusters (such as renewables, ICT, eMobility) – it was to be expected that the financial crisis would reduce global demand – and hence raw materials prices – only temporarily. And indeed, the prices of raw materials have now begun to rise again at a disproportionate rate – the price of non-ferrous metals, for instance, rose by approximately 25% between August 2009 and August 2010

It was against this background that the major conference on “Resource Efficiency – A Motor for Green Growth” took place in Berlin on 5 October 2010. The conference was attended by more than 400 participants.

The conference programme and the short input papers by the initiators of Forums I to V can be found in the appendix to the German version of this paper.

The following are brief summaries of the keynote speeches, the discussions in the five forums and the statements by Katherina Reiche (Parliamentary State Secretary in the Federal Environment Ministry) and Jochen Flasbarth (President of the Federal Environment Agency).

Four keynote speeches on “Green Growth – New Perspectives for the Twenty-First Century” looked at the issue from a number of different perspectives.

1.1 Dr. Norbert Röttgen, Federal Minister of the Environment

For Federal Environment Minister Röttgen resource efficiency is not just “a motor for an ecological modernisation and growth policy” but also a matter of responsibility to future generations; in order to preserve the basis for life, growth in quality of life must be decoupled from consumption of natural resources. Minister Röttgen made it abundantly clear that up till now economic growth and prosperity have been based on the unsustainable use of finite resources. Not only the earth’s resources but also the ability of the atmosphere to absorb gases that have an effect on climate are reaching their limits, he said. For this reason resource conservation and climate protection are two inseparable issues.

The growth concept of the twentieth century no longer offers any perspective for the twenty-first century. A transformation to methods of producing and consuming that preserve natural resources is now essential. At the centre of this “new intelligent growth principle,” he said, were technological innovations that were being developed in global competition and seeking to establish themselves in a world undergoing geostrategic shifts, yet at the same time they needed to be embedded in a process of global cultural change in the direction of more sustainable forms of consumption, which meant not so much doing without a new quality of growth and prosperity but rather redefining it as “growth in quality of life”.

No other country in the world, he added, was in such a globally competitive position to increase resource efficiency as Germany. This would, however, require breaking with the habit of “excessive short-sightedness”, which had brought the world to the brink of disaster during the financial and economic crisis and instead adopting a long-term strategy to raise resource efficiency. In keeping with this view Minister Röttgen proclaimed the government’s intention to make Germany “the most resource-efficient country in the world” and to make the issue of resource efficiency alongside energy policy “one of the main issues of this legislative term”.

1.2 Karl Falkenberg, Director-General of Environment at the European Commission

Karl Falkenberg, Director-General of Environment at the European Commission, likewise emphasized: “There can be no global sustainability without resource efficiency”. He expressed the EU’s view that a set of indicators was needed to record progress in resource efficiency as well as the internalisation of external costs in prices. In addition, he identified two special challenges for the EU: firstly, overcoming the differential in resource efficiency within Europe (the United Kingdom is seventeen times more resource efficient than Bulgaria, for example) and, secondly, securing access to strategically important raw materials (e.g. rare earths) via free trade links.

1.3 Prof. Dr. Meinhard Miegel

While concurring with the policy of raising resource efficiency Prof. Miegel's speech "Prosperity without Growth: How We Can Live Better" skilfully made the point that it would not be sufficient to rely solely on increasing efficiency, because this would always be more than compensated for by what he termed growth and luxury effects. Moreover, it had become apparent that "only much lower growth than we allow ourselves" would be viable for the future. Therefore it was the job of policy-makers to communicate more clearly where "accelerated growth" was permissible (e.g., in immaterial services in the social sector and in education and culture), and also which areas must be "slowed down" because they are not viable for the future.

1.4 Dr. Werner Schnappauf, President of the Federation of German Industries

Dr. Schnappauf, President of the Federation of German Industries, spoke on the subject of "Resources and Green Growth: The New Point of Orientation for Industry". Referring to the theory of "long waves" or long economic cycles expounded by the Russian economist Nikolai Kondratiev, he said resource efficiency may have the potential to trigger a new "Kondratiev cycle". He emphasized, however, that green growth – the accelerated expansion of wind energy, for instance – would actually require products from sectors of the old economy, like the steel industry, and from new high-tech industries. A low-carbon society wishing to expand renewables and increase energy efficiency would be heavily reliant on innovations from the manufacturing industries. He criticised the state for being a "lousy commodity buyer" with respect to resource efficiency and concurred with the MaRes assessment that state procurement should set an example in raising resource efficiency.

2 Podium Discussion

In the following podium discussion between the keynote speakers the question of limits and the possibility of a new "green quality" of growth were once again taken up and policy-makers were urged to take a much more differentiated approach to the growth issue.

3 Forums

In the five forums held in the afternoon the results of the project "Material Efficiency and Resource Conservation" (MaRes) were presented in detail and commented on by representatives from science, politics and the economy as well as being discussed with conference participants.

3.1 Forum I: “Core Strategies: How Can Resource Efficiency Policy Successfully Promote Green Growth?”

- Prof. Dr. Peter Hennicke/Dr. Kora Kristof, Wuppertal Institute (moderation & input)
- Katherina Reiche, Parliamentary State Secretary in the Federal Ministry of the Environment
- Werner Rissing, Head of the Department of Industry Policy at the Federal Ministry of Economics and Technology (BMWi)
- Wilfried Kraus, Deputy Director of the Department of Sustainability, Climate, and Energy at the Federal Ministry of Education and Research (BMBF)
- Jörg-Andreas Krüger, Deputy Director of the German Nature Protection Society (NABU)

In Forum I the six core strategies developed in the MaRes project (see Input paper to Forum I in the appendix to the German version of this paper or the English summary of Task 7 – AP7 – of the MaRes project) for the promotion of green growth were presented and commented on by representatives of the relevant departments of the BMU, BMWi and BMBF and by a representative of NABU. In order to make it easier for policy-makers to scale up (and bundle) the large number of activities already running, the comprehensive Policy Mix developed by the MaRes project in three Tasks (concerning framework conditions and enterprise- and consumer-related instruments) focused on priorities, target groups and budgetary impact in core strategies. The project leaders, Dr. Kora Kristof and Prof. Dr. Peter Hennicke, outlined how the proposed core strategies could be financed (total annual volume of financing required: ca. EUR 1.3 billion) via revenues obtained by introducing a tax on natural construction materials or via a restructuring of programmes already running. The model calculations carried out under the auspices of the MaRes project (see Forum III) showed that an integrated resource and climate protection programme could have a positive impact.

Katherina Reiche, Parliamentary State Secretary in the Federal Ministry of the Environment, stressed that policy-makers were prepared to actively assume the task of shaping a resource efficiency policy. Frau Reiche stated that particularly for a country like Germany with few natural resources of its own, running the economy in a resource-efficient way was imperative. The federal government would therefore launch a national resource-efficiency programme. In the words of Frau Reiche: “Many efforts are already being made to tap the great potential identified for increasing resource efficiency. These should be brought together in a national resource efficiency programme proposed by the government for next autumn (the European Commission Drive for a Thematic Strategy for Resource Efficiency). This plan should specifically include ways to achieve a sustainable raw materials policy, raising resource efficiency in production and consumption, a strengthening of recycling management and generally a greater R&D effort and greater attempts to increase public awareness”.

The BMWi and BMBF representatives said the two ministries were currently examining the programmes running in the fields of sustainability, climate and energy to see how the issue of resource efficiency had already been successfully integrated into research activities and industry policy.

The spokesman for NABU emphasised that natural resources policy should be given a great deal more attention and that additional quantifiable targets were required in order to increase awareness and encourage action at all levels.

3.2 Forum II “Future Markets for Green Growth: Where Is the Greatest Potential for Increasing Resource Efficiency?”

- Holger Rohn, Trifolium/Nico Pastewski, FhG-IAO (moderation & input)
- Prof. Dr. Ulrich Buller, Senior Vice President Research Planning, Legal Affairs for the Fraunhofer Society
- Prof. Dr.-Ing. Heinz Voggenreiter, Association of German Engineers, Materials Engineering, Director of the DLR Institute of Structures and Design and Material Research and Chairman of the Advisory Board of the Centre for Resource Efficiency and Climate Protection
- Wolfgang Rhode, Member of the Board of the trade union IG Metall

The results of Forum II can be summarised in seven points:

- Increasing resource efficiency requires a focus on central fields of action. Seven such principal fields of action were expounded in Task 1 of the MaRes project and must now be pursued and implemented.
- Potential analyses must also be carried out for other sectors and other issues. As a basis for this the data basis should be harmonised and improved and suitable standards established.
- Research on resource efficiency needs to assume an important role in scientific and research institutions so as to make progress on this issue. The requisite research funding for research projects on production and consumption must be better focussed and budgets made available.
- In practice resource efficiency considerations must be put on a par with economic viability and functionality when developing and producing products and services. The goal of increasing resource efficiency can only be achieved if this principle is applied consistently along the entire value chain, including consumption.
- Resource efficiency must be made an obligatory component of training programmes, in particular for technicians and engineers as soon as possible. To achieve further progress in resource efficiency in practice will require specialists; one example would be to train special “resource efficiency angels” to carry out resource efficiency analyses.

- Resource efficiency must be made an issue in companies. Companies must recognise the importance of resource efficiency as a **strategic** issue so that they can take appropriate action. Only in this way can resource efficiency potential be tapped that goes beyond one-off solutions. (Putting resource efficiency on the corporate agenda would also have an impact on employees and Works Councils, which could use their professional competence to influence processes and promote resource efficiency.)
- From the perspective of technology particular attention should be focused on the following:
 - Goods with a long life
 - Materials savings
 - Recycling
 - Energy efficiency

3.3 Forum III “Resource Efficiency: What Are the Goals and What Impact Do the Policies Have?”

- Dr. Stefan Bringezu, Wuppertal Institut/Prof. Dr. Bernd Meyer, GWS (moderation & input)
- Dr. Peter Viebahn, Wuppertal Institute
- Klaus Brunsmeier, Vice President of BUND (Friends of the Earth Germany)
- Dr. Harry Lehmann, Division Director Federal Environment Agency

Owing to the illness of Harry Lehmann and the fact that Stefan Bringezu was unable to attend the conference, Forum III produced only three inputs:

- Professor Meyer presented the results of the simulation calculations performed using the economic-environmental model PANTA RHEI of the GWS. The main points were:

A committed climate policy combined with a policy for increasing material efficiency could achieve a complete decoupling of economic growth and resource consumption with a positive impact on GDP and a clear absolute reduction in resource consumption. The goal of doubling resource productivity in the next twenty years is achievable. An information and consultation programme to harvest the “low hanging fruit” (i.e. reach the easier targets) would be very effective in the medium term. In the long term resource-saving technical advances must be realised: in Germany the particular importance of metals means that recycling is an important option (also for building materials). Economic instruments are important because they create the right incentives in all sectors of the economy. Negative side effects can be avoided through compensation.

- Peter Viebahn reported on simulation calculations with the bottom-up model of the Wuppertal Institute and made the following recommendations for policy-makers: Implement the energy saving and efficiency strategies laid out in the BMU's 2008 reference scenario and confirmed in MaRes scenarios. Use industrial policy initiatives to avoid production of fluorinated hydrocarbons (particularly in the production of insulation materials) and evaluate other building materials and alternatives from a resources perspective. Launch research policy initiatives to develop a standardised environmental life-cycle accounting approach with up-to-date and reviewed data (where appropriate in conjunction with the German Life Cycle Data Network) and to evaluate the scaling up of renewables from the perspective of resources and land requirements as well as a trade-off analysis. Integrate resource criteria in measures to promote energy saving or climate protection.
- In a brief speech Mr Brunsmeier (BUND) commented on environmental policy over the past ten years and called on the government to shoulder more responsibility. In particular he called for environmental targets to be pursued more systematically according to an annual timetable and not just for a distant future.

Approval for these statements was expressed in the ensuing discussion, which focused on the lecture given by Professor Meyer and specifically the strength of the rebound effect and its significance for an absolute reduction in resource consumption and CO₂ emissions. Discussion participants also asked to what extent international competition had been taken into account in the simulations.

3.4 Forum IV “Routes to Successful Implementation: The Success of the Network”

Resource efficiency and the current roadmapping process

- Dr. Siegfried Behrendt, Institute for Future Studies and Technology Evaluation (IZT)/Prof. Dr. Klaus Fichter, Borderstep Institute (moderation & input)
- Reinhard Kaiser, BMU, Deputy Head of the Resource Efficiency Department
- Dr. Peter Jahns, Director of the NRW Efficiency Agency/Resource Efficiency Network
- Dr. Eric Maiser, German Engineering Federation (VDMA) Director of the Forum Means of Production in Photovoltaics
- Jürgen Graf, Federal Association of Information Management, Telecommunication and New Media (BITKOM) Working Group Thin Client & Server-Based Computing
- Ralf Baron, Director Arthur D. Little GmbH and a member of the MaRes Advisory Committee

Mr Kaiser (BMU) stressed that in the Resource Efficiency Network regional conferences also had an important role to play alongside national conferences as a way of

reaching enterprises and other actors locally. In addition sector-related dialogues, as for example in the metal industry, were of central significance in the Resource Efficiency Network, as indeed were roadmapping projects of the kind implemented under the auspices of MaRes for the fields of photovoltaics and work station computers.

Dr. Behrendt (IZT) presented the roadmap “Resource-Efficient Photovoltaics 2020+” developed under the auspices of Task 9 (AP9) of the MaRes project. This showed the high ecological and economic potential that still exists in the value chain, especially in the production and recycling of PV products, and how it could be tapped in practice. The roadmap formulates concrete measures and milestones for tapping this potential.

Dr. Maser (VDMA) emphasised the major role played by mechanical engineering in the manufacture of photovoltaics products and expressed his great satisfaction with the results of the roadmapping project in which the VDMA and many companies from the photovoltaics value chain participated. He said this project had led to the formulation of clear machinery requirements that would need to be taken into account in the future. He also pointed out that the VDMA had already taken some concrete steps towards implementing the roadmap “Resource-Efficient Photovoltaics 2020+” and that the effects were already beginning to be felt.

Prof. Fichter (Borderstep) presented the roadmap “Resource-Efficient Work Station Computer Solutions 2020”, likewise developed under the auspices of Task 9 (AP9) of the MaRes project together with BITKOM, IT providers and users, research institutes and the Federal Environment Agency. The great potential for saving energy, materials and costs should be tapped via the thirty-nine measures contained in the roadmap, he said, adding that a central next step for implementing the roadmap would be the founding of a “Green Office Computing” initiative.

In his speech Dr. Jahns (NRW Efficiency Agency) highlighted the importance of addressing companies at the regional level. Alongside information tailored to the target group and motivating best practice examples, he said, good advice was important particularly in small and medium-sized enterprises (SMEs) for tapping existing resource efficiency potential. A central task was therefore to build up powerful networks of consultants in the regions. Here there were still some “blank spots” in certain regions of Germany.

In his commentary Mr Baron (ADL) described the MaRes roadmapping projects and the method of cooperative roadmapping as a very important “mechanism” for jointly tapping resource efficiency potential. He said he was impressed by the results and said the long-term perspective, the identification of obstacles that needed to be overcome and the concrete measures conceived for the roadmaps were a particularly valuable contribution.

The subsequent discussion addressed a number of important aspects concerning tapping resource efficiency potential, particularly with respect to SMEs. These included addressing SMEs at the regional level, the role of “intermediaries” (e.g., efficiency agencies, efficiency consultants) and securing continuous support.

3.5 Forum V “Resource Efficiency and Critical Metals: Shortages in a Few Years Time? Challenges and Policy Responses”

- Prof. Dr. Raimund Bleischwitz, Wuppertal Institute/Dr. Klaus Jacob, Free University Berlin (moderation & input)
- Prof. Dr. Armin Reller, Chair of Resources Strategy at the University of Augsburg
- Dr. Michael Angrick, Department Head, Federal Environment Agency
- Dr. Benjamin Bongardt, Consultant for Environment Policy at NABU

Certain critical metals of great importance for future technologies (including information and communications technologies, renewable energy technologies) are likely to be in short supply in the medium term. Rising or highly volatile prices have been recorded, even for metals with plentiful reserves. The environmental impact of critical metals along the value chain is enormous. Too little is known about the eco-toxicological impact of critical metals, which have only been dispersed into the biosphere in the past few years or decades via man-induced or dissipative use. So far there are no generally recognised criteria for what constitutes a critical metal and no generally recognised list of critical metals. In this context, critical means either in short supply or environmentally risky.

Using a policy mix resource policy can help both to alleviate shortages in the supply of critical metals and to limit their environmental impact while at the same time encouraging the ecological modernisation of the economy. Suitable instruments for a resource policy include obligations to provide information about material flows, dynamic production standards to raise the proportion of recyclable components in a given product, taxation of raw materials use and international agreements based in private law for better recycling (Metals Covenant). Critical metals is an area where there is a particularly wide gulf between the geographical and temporal positive effects (high-tech products sold on the market in industrialised countries) and the negative consequences (polluting the environment in developing countries through the extraction of raw materials and depositing electronic waste). This is one of the special challenges that resource policy instruments face. In the case of metals and minerals, which have global value chains and externalities, a resources policy that focuses only on domestic use or domestic efficiency potential is decidedly too short-sighted.

Resources policy has yet to become part of the day-to-day political agenda. One way to change this would be to optimise existing instruments – e.g. in waste disposal law. New instruments limiting products’ access to the market would need to be introduced at the European level, although much discussion and time would be required to reach agreement. Furthermore resource policy should not be solely technology-oriented but should also include lifestyles.

For an effective recycling of critical metals political incentives are required. These should not, however, like for example the WEEE directive, aim to achieve volume-

based recycling goals, but instead should encourage recycling “with a fine-tooth comb”. In addition design for recycling must also be more strongly promoted by policy. For some critical metals such as rare earths, shortages can already be predicted for the near future and not just in the medium term. One promising approach that would facilitate the recovery of critical metals by manufacturers would be leasing models, for instance for mobile phones or electric cars or bicycles. Resource policy measures should also aim to keep raw materials recovered from old products within the EU. Here the establishment of an effective recycling system would have a central role to play. With respect to electro-mobility it should also be noted that no satisfactory recycling concept for lithium has yet been found.

3.6 Highlights from the Forums

In conclusion State Secretary Frau Reiche summarised what she considered to be the highlights from the lectures and discussions.

She emphasised that the German government would be devoting itself intensively to a resource policy concept over the next year. A consensus existed that additional incentives and stronger promotion of resource efficiency activities were necessary. As the model calculation in the MaRes project showed, government impetus programmes for promoting resource efficiency are expected to have a positive effect on innovation and growth. Frau Reiche made it clear that further long-term scenarios with concrete intermediate steps concerning the economic and environmental impact of increased resource efficiency would be necessary.

Frau Reiche stated: “We see resource efficiency as a classic win-win strategy”. She therefore welcomed the concerted effort being made by the ministries of the environment, economics and research, which, she said, was also an important factor in the success of the “national resource-efficiency programme” announced by the government. She said the MaRes project and the conference had provided many valuable ideas for the new policy mix required to develop this programme.

4 Perspectives for a Successful Resources Policy

The event ended with a look at the perspectives for a successful resources policy by President of the Federal Environment Agency Jochen Flasbarth. The MaRes project had been put out to tender and funded jointly with the Federal Ministry of the Environment because material efficiency and resource conservation had been a high priority in the Federal Environment Agency for a long time. He added that the results of the MaRes project could provide a starting point for other open questions, including those at the European level. The issue of resource efficiency was “right at the top of the agenda for the future” of the Federal Environment Agency.

In his speech on future perspectives Mr Flasbarth focused primarily on the core strategies developed by the MaRes project. He said it was now time to move on from the

phase of the aforementioned “low hanging fruits” to strategies straddling several different policy areas, because the issue of resource efficiency was “essential for all national economies”. Although Germany has increased its raw materials productivity by around 47% since 1994, it is still a long way from meeting the government’s target of doubling raw materials productivity by 2020. Therefore new targets (e.g., recycling quotas) need to be set at the macro level as well as the micro level. Mr Flasbarth recalled that energy and climate policy had begun two decades ago with “baby steps” and that back then no one would have imagined it possible that by 2050 almost 100% of electricity could be supplied by renewables. Mr Flasbarth expressly stressed the necessity of involving the financial sector in the core strategies and said that resource efficiency parameters could be used to make a contribution to the long-term stabilisation of the financial sector. Particular attention should also be paid to global aspects: “We must think internationally with respect to resource efficiency”. Mr Flasbarth emphasised here that this was not primarily a foreign trade issue but rather a matter of bridging the gaps at a national level and increasing resource efficiency in order to reduce the resource dependency of the German economy.

Last, but not least, Jochen Flasbarth recalled the fact that resource efficiency was still an “unwieldy issue” for the general public. All the more important, therefore, to implement offensive communications strategies and to use well-known environmental symbols like the Blue Angel.

Finally the President of the Federal Environment Agency thanked all the experts in the MaRes consortium as well as the Wuppertal Institute for coordinating the project and putting in valuable work.

A reader distributed at the conference contains the summaries of the MaRes Tasks (see www.netzwerk-ressourceneffizienz.de/to_join/maress_grosskonferenz/index.html).