

VDI

Zentrum
Ressourceneffizienz

A photograph of two men walking in a factory. The man on the left is wearing a dark blue suit, a light blue shirt, and a dark tie. The man on the right is wearing a blue long-sleeved shirt, a bright yellow safety vest with reflective stripes, and dark pants. They are both looking at a tablet held by the man in the safety vest. The background shows industrial equipment, pipes, and a forklift.

The Easy Way to Resource Efficiency

The management guide for your business

Editing and design:
VDI Zentrum Ressourceneffizienz GmbH

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In order to live within planetary boundaries and at the same time enable nine or ten billion people to live in peace and have social security, we must decouple growth and prosperity from resource use. Innovations in resource efficiency and climate protection are the best economic policies.

Svenja Schulze,
Federal Environment Minister



Image: © VDI ZRE

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The guiding principle of decoupling the consumption of finite natural resources from economic growth and consumption brings many winners: Competitive companies, satisfied employees, an attractive location in Germany and the conservation of our planet's natural resources.

Dr. Martin Vogt, Managing Director

VDI Zentrum
Ressourceneffizienz GmbH



Image: © Hoffotografen GmbH

Resource efficiency: YOUR COMPETITIVE ADVANTAGE!

The steady growth of the population and global prosperity increases the demand for goods and therefore, the use of natural resources. This affects, for example, oil, metal and mineral resources, as well as water and natural gas. Rising demand not only impacts the environment but can also lead to bottlenecks and price increases in the raw material markets.

MATERIAL IS THE LARGEST COST FACTOR

The proportion of material costs in manufacturing amounts to 41% (Federal Statistical Office 2018). For comparison: The often discussed personnel costs are at 18.5%. This illustrates that companies are significantly impacted by their material costs and economic success hinges on price increases in the raw material market. However, there is also opportunity in this, because those who handle resources efficiently

gain a competitive advantage. Increasing resource efficiency means reducing energy and material consumption. According to a study commissioned by the VDI Centre for Resource efficiency (VDI ZRE) started in 2015 73% of small and medium-sized enterprises (SMEs) see savings potential in their own industry precisely in this area.

CONSIDERING THE ENTIRE PROCESS CHAIN

Resource efficiency affects the entire process chain, from product design, production and material processing to waste disposal or recycling of residual materials. This includes the services associated with the product.

Resource efficiency potential can be exploited, for example, through innovative technologies, the optimisation of production processes as well as material substitution and recycling.

RAW MATERIAL REQUIREMENTS FOR FUTURE TECHNOLOGIES

In order to expand and develop future technologies, companies need raw materials, such as high-tech metals. Rising demand and the partially existing monopolies of the mining regions may lead to price increases with associated economic burdens.

rare-earths, which are needed for magnets of electric automobiles or for generators of wind turbines. A higher demand will be seen in the future than is currently being produced, especially for these raw materials.¹

Germany, as an industrial location, needs technological raw materials, in particular, for new technology areas such as electromobility, the expansion of renewable energies and the progressive digitalisation. Examples are lithium for the production of lithium-ion batteries as well as heavy and light

Not only the rising demand for raw materials, but also global political conditions influence raw material prices. The efficient use of natural resources in businesses can help to reduce the negative impact on costs.

HOW YOU CAN BENEFIT FROM RESOURCE EFFICIENCY

Resource efficiency pays off for companies of all sizes and industries!

Sustainable business reduces costs, makes you less dependent on price fluctuations on the market, and gives you competitive advantages.

When implementing resource efficiency in your business, you are also developing know-how, processes, and new technologies where applicable that can be sold around the world. This can benefit your company.

This will also benefit Germany as a location, as this creates growth and jobs. In addition, you protect the environment. What's good for our planet, is also good for your business. Customers are increasingly paying attention as to whether the goods they buy are produced in an environmentally friendly way.

With resource efficiency, you not only secure the future of your company, but you also help shape the future of Germany as a business location and future generations.

RESOURCE EFFICIENCY FOR YOU MEANS:

- Cost reduction in material and energy consumption
- Increase competitiveness
- Acquire new markets
- Securing jobs
- Environmental relief
- Enhance the corporate image

From production to disposal: MEASURES THAT HELP YOU

Resource consumption occurs throughout the product life cycle; from materials production, production and utilisation, to recycling and disposal.

Saving approaches can be found in:

- product improvement,
- process optimisation,
- cascade use,
- substitution and
- recycling.

PRODUCT IMPROVEMENT

Product development determines which materials are needed for production and how much expenditure is involved. It also determines the possibilities of recycling. About 85% of the manufacturing costs and resources used for a product are determined by the design.²

This is exactly where you can lay the foundation for resource efficiency by systematically analysing the various possibilities of

product design and their impact on utilisation and recycling, etc. One approach to product design is, for example, disassembly- and repair-compatible product design. A simplified disassembly process not only has a positive impact on repair and maintenance, but also improves recyclability at the end of the product service life.



Image:
© Jennewein/Fotolia.com



PROCESS OPTIMISATION

By optimising operational processes, you can significantly contribute to the efficient use of resources. This can already start on a small scale – for example, in in-house transport or in the reuse of material. It can also mean printing on double-sided paper or replacing paper towels with electric hand dryers in the washrooms. With a well-planned job sequence, you can avoid production breaks and save on materials with short shelf life, for example. Optimising maintenance and repair cycles helps you make better use of tools.

Another way of optimisation is in the process selection. With a material-saving process, waste can be decisively reduced. An example from metalworking shows: By using preformed blanks instead of solid material, a company was able to reduce material

waste by 50%, reduce machining times and reduce tool wear.

But you can also save money by investing in innovative technologies. In a combined heat and power plant, power is generated, for example via a generator, and any accumulated heat can be used to heat rooms and water – a process that is also used in hospitals, in the food industry or in the skilled crafts industry.

CASCADE USE

Cascade usage describes the use of material over several consecutive usage levels with decreasing requirement levels. You can consider later usage cycles of the resources already during the process design. For example, used water can be reused for further production steps with low quality requirements.

A bakery company in northern Germany follows a similar principle: It uses used frying fat to provide energy. Cascade use can also mean the thermal utilization of raw materials from the end products. For example, wood products can be used for heat production after serving their purpose.

SUBSTITUTION

Individual raw materials can be replaced by more resource-efficient alternatives. See if you can replace scarce, fossil raw materials with renewable or cheaper alternatives with a longer range.

For the cladding of vehicles, for example, glass fibres are already being replaced by raw materials such as flax or cotton. The use of lightweight materials such as aluminium or plastic can reduce weight. Furthermore, new technologies can be used to develop functional materials that offer the same or even better performance with lower consumption and thus replace conventional materials.



Image: © Jovanjarić/panthermedia.net

RECYCLING

When recycling, you gain raw materials from by-products or old products and use them for the production of new products. The higher the prices of raw materials, the more worthwhile it is to recycle raw materials. The selection of raw materials and the corresponding recyclability should already be taken into account during product development.

In recent years, recycling has also opened up new prospects. By using the X-ray transmission analysis as well as various processing, sorting and separation processes, it is possible,



Image: © 831days/stock.adobe.com

for example, to obtain uniform aluminium fractions from waste scrap. As a result, a product-specific recycling can be achieved.

i SUPPORT IN THE PROCESS OPTIMISATION

For the manufacturing sector, VDI ZRE has bundled information from a wide range of industries and presented it visually and compactly in process chains.

The process chains represent knowledge systematically, show resource efficiency potential and offer solutions. It details the best available techniques (BAT), projects and good practice examples for various industrial processes.

The process chains can be found on the VDI ZRE website at: www.ressource-deutschland.de/instrumente/prozessketten/

Examples from practice prove: RESOURCE EFFICIENCY PAYS OFF

/// The following examples show that often several approaches are implemented simultaneously:

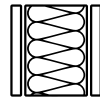
SAVED



200,000 €/yr

Through new production process and use of recyclable raw materials

At Binné & Sohn GmbH & Co. KG, the producer of bitumen-based thermal insulation, material accounts for a large part of the total costs. The company changed its production process and is now processes recyclable residues. The production planning has also been optimised. This enables an efficient use of resources and thus reduces material costs by 200,000 euros per year.



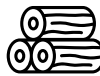
GAS COSTS



0 €/yr

Heating with multi-used raw materials sets gas costs to zero

The joinery Kicinski became aware of the large amount of wood left over after processing. This even exceeded the heating demand by 10%. The company therefore decided to convert its heating system to wood firing from its own material surplus. This eliminates all the gas costs for heating the workshop. Office and social rooms are to follow.



SAVED



800,000 €/yr

Through holistic optimisation of all processes

Laundries are very energy intensive companies. In order to improve its energy balance, CHMS has therefore changed many processes over the last 20 years. It was important to have a holistic process view. Today, for example, it uses filtered rainwater for textile washing, uses the soapy water several times and avoids heat losses on the lines. The balance is amazing: 70 - 90% of the water, electricity and gas consumption could be saved, and meanwhile, the company costs continuously decreased by 800,000 euros annually.



SAVED



70,000 €/yr

Through optimisation of technologies and processes

In order to improve its profitability and product quality, Moll Marzipan GmbH started a comprehensive investment programme in 2010. The investment of 135,000 euros in a new blanching system not only enables the company to use raw materials more efficiently, but also to improve the quality of the final product through the low-impact process. The plant also enables the company to produce in a resource-efficient manner and save energy and water costs by 70,000 euros annually.



The way to the goal: FIND SAVINGS POTENTIALS

The first step in making your own company more resource-efficient is to know your own consumption, to identify sources of loss and to identify potential savings. Various instruments and tools can help to uncover savings potentials in the company.

RESOURCE CHECKS OF THE VDI ZRE

Do you want to know where your company or building stands in terms of resource efficiency? Then take the test! VDI ZRE's resource checks will give you suggestions as to where there are potentials in the company to operate more efficiently. To this end, VDI ZRE has worked out questions on the key topics

of material efficiency, energy efficiency and employee involvement, which will help you get an initial overview of possible savings potentials in your company or building. A subsequent detailed evaluation provides measures, tools and methods for implementation.

i Do you want to know where your company or building stands in terms of resource efficiency? Then take the test: www.ressource-deutschland.de/instrumente/resourcechecks/

The checks for companies can be classified into three categories:

GENERAL

A **Basic Check** for a first overview, in which you will learn how to avoid material losses caused, e.g., by reworks in production, and reduce your overall energy consumption, and a **Production Infrastructure Check**, in which you can analyse the environment of your production, e.g., lighting, air conditioning / heating, compressed air.

TECHNOLOGY-SPECIFIC

The so-called **Industry Checks** provide a catalogue of selected questions to help you assess the efficiency of your operational processes. Industrial checks are offered for various manufacturing processes from injection moulding to painting to machining. In addition, there are Industry Checks for process-oriented methods in the chemical industry and on key topics such as for metal processing or indus-

try-related wood processing.

CUSTOMISABLE

The **Checking toolkit** can be used to create a resource check tailored to your production processes. Using the Checking toolkit, You can create the questionnaire to suit your requirements depending on which manufacturing processes are used in your company, whether you want to consider material efficiency, energy efficiency or both.

Image: © tontectonix/stock.adobe.com

- Compact
- Clear
- Evaluation as PDF

ONLINE TOOL “STRATEGIES & MEASURES”

The online tool on the website of the VDI ZRE shows companies in the manufacturing sector relevant strategies and measures to increase their own resource efficiency.

The tool distinguishes between product-related, process-related as well as product- and process-independent strategies and measures. Goals and function, the relation to resource efficiency,

areas of application and stakeholders as well as application limits are presented and explained for the individual strategies.

Specific application examples illustrate the potential advantages as well as the resource-saving potential. In addition, the challenges of their implementation are also shown.

THE RESOURCE EFFICIENCY GUIDE OF THE VDI ZRE

The resource efficiency guide of the VDI ZRE gives you a roadmap with which you can successfully implement resource efficiency projects in operation. It explains in detail the individual steps from the analysis to the implementation of resource efficiency measures.

The guide is divided into the steps of analysis of production or of the product, development of solutions for process and product improvement, evaluation for the

selection of suitable optimisation measures as well as their implementation and control.

Different methods and tools are presented for each step, which can be used for the successful execution of each step. The user also receives important information about which data must be collected in the company and how they can be obtained.

i Both online tools can be found on the VDI ZRE website at: www.ressource-deutschland.de/instrumente



EXTERNAL ADVICE? WHAT CONSULTANTS CAN DO

The use of external consultants can make sense where the company's own capacities for the analysis and development of improvement measures are limited. The right consultant can help to find potentials for increasing resource efficiency and to implement appropriate measures. Because he has specialised know-how, additional capacity or a new look at well-established processes and brings with him experience that you can use for your business. Establish a “good rapport”

between the consultant and your employees from the beginning. Changes often create insecurity and anxiety – especially when an external consultant for the topic of “efficiency” is involved.

From the start, make sure the consultant (also) advises your employees, and they know what it's all about. This avoids uncertainties.

FIND A CONSULTANT

A qualified consultant can help to define and exploit the potentials for resource efficiency in your company more precisely. But how do you find “the right one”?

For example, [Umwelttechnik BW](#) in Baden-Württemberg provides an Expert Atlas Resource Efficiency ConsultA-RE, which helps companies to find a suitable consultant in their region. The [RKW Competence Centre](#) also supports SMEs in their search for suitable consultants. Through the various national associations of the RKW network, companies can find their contact person on site. Another option is the consultant exchange of the [KfW banking group](#). The focus of the consultants listed there lies in the area of business start-ups and consolidation as well as technology and innovation consulting.

In addition, many federal states offer special regional advisory and promotional offers for companies to improve resource efficiency.

Some offers in the federal states are listed below as examples:

The [Effizienz-Agentur NRW](#) supports companies in North Rhine-Westphalia with sponsored [PIUS](#) (production-integrated environmental protection) consultations. The [Effizienznetz Rheinland-Pfalz](#) offers companies a funded resource efficiency analysis with EffCheck. The [Umwelttechnik BW](#) supports material efficiency consulting for companies in Baden-Württemberg with the EFFIMA-BW programme. The [Klimaschutz- und Energieagentur Niedersachsen](#) (KEAN) offers sponsored impulse advice on material and energy efficiency for SMEs. [Hessen Trade & Invest](#) supports companies in the federal state with the sponsored [PIUS](#) consulting - Hessen-PIUS.

i The offers can also be found under the heading “Support and Advice” on the website of the VDI ZRE: www.ressource-deutschland.de/instrumente/foerderung-beratung/

INVOLVE EMPLOYEES

Your employees often know best about where your company has potentials for resource efficiency. Hook them in and make sure they go along with you. Here are some tips:



TIP 1

Give the project a name

Changes start in the head. If your project has a catchy name for resource efficiency, your employees will have the opportunity to identify with it, think along with the project, and talk about it.



TIP 3

Integrate all areas and departments

Discuss every element of the process chain and examine where efficiency potentials are and what effects can changes in the process chain have.



TIP 2

Enable suggestions for improvement

In order for the suggestion system to work, your staff must be able to submit their suggestions to a specific location and receive an answer and recognition of their suggestions. You must know from your own experience: They can help shape their work environment.





With the help of resource efficiency: FUNDING FOR YOUR COMPANY

For companies that want to implement resource efficiency, there are a variety of support and funding opportunities. In addition to the funding already mentioned for consultation, we present below a selection of funding programmes.

i Information on selected funding programmes and a link to the funding database of the federal government, the federal states and the EU can be found on the VDI ZRE website at: www.ressource-deutschland.de/instrumente/foerderung-beratung/

ENVIRONMENTAL INNOVATION PROGRAMME (UIP)

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

The Environmental Innovation Programme (UIP) of the BMU serves to support large-scale initial applications in production processes and products in order to relieve the environment in the most cost-effective manner. A prerequisite is that the plants and processes to be supported

have a demonstration character in the technical sense and are integrated as much as possible into the production processes. In addition, it must not be possible to implement the project without the funding or only with considerable delay.

Further information can be found at: www.bmu.bund.de and www.umweltinnovationsprogramm.de

GERMAN FEDERAL ENVIRONMENTAL FOUNDATION (DBU)

The German Federal Environmental Foundation (DBU) promotes innovative, exemplary and solution-oriented projects for the protection of the environment. In this context, particular attention is paid to SMEs. Twelve funding topics in the fields of environmental technology, research and communication, protection of natural resources and cultural heritage as well as open-topic funding are provided by the DBU.

In particular, the topic “resource efficiency through innovative production processes, materials and surface technologies” addresses the promotion of innovative resource efficiency projects in companies. Applications can be submitted continuously for both individual and cooperation projects. Normally, companies receive 50% of the project costs.

Further information on individual funding programmes can be found at: www.dbu.de

KMU-INNOVATIV (SME INNOVATIVE)

Federal Ministry of Education and Research (BMBF)

Since 2007, the BMBF has been supporting SMEs as pioneers of technological progress in Germany with the KMU-innovativ (SME innovative) programme. The following technology fields are addressed innovatively with SMEs:

- Biotechnology
- Electronics; autonomous electric driving
- Research for civil security
- Medical
- Information and communication technologies
- Materials research
- Human-machine interaction
- Photonics and quantum technologies
- Production technology
- Resource efficiency and climate protection

In order to support SMEs, in particular, who have little or no experience with BMBF-funded research and development projects, a so-called entry-level module is offered to help SMEs gain access to the funding measure.

Further information on the funding measure can be found at: www.bmbf.de/de/kmu-innovativ-561.html



CENTRAL INNOVATION PROGRAMME SME (ZIM)

Federal Ministry for Economic Affairs and Energy (BMWi)

The Central Innovation Programme for SMEs (ZIM) is a nationwide technology- and industry-oriented funding programme for SMEs and research institutions that work together with SMEs.

The funding programme of the BMWi supports companies in sustainably strengthening their innovative strength and competitiveness. The programme offers various funding options:

Individual ZIM projects

Funding for individual company research and development projects. These are carried out with the company's own personnel in the business.

ZIM cooperation projects

Funding for joint research and development projects of two or more companies or for cooperation with research institutions.

ZIM cooperation networks

Support for external network management services of innovative networks. In this context, at least six SMEs join forces for the joint development of an interdisciplinary technological innovation.

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Further information about the ZIM can be found at www.zim.de

INNOVATION VOUCHERS “GO-INNO”

Federal Ministry for Economic Affairs and Energy (BMWi)

The programme is aimed at small businesses, including skilled craft. The “go-Inno” module promotes external innovation consulting for the preparation and implementation of technical process and product innovations.

With innovative product solutions, you can gain new customers, expand your sales market and strengthen your competitiveness. In principle, the funding is provided without any subject-related restriction to specific technologies,

products, industries or economic sectors in two funding stages:

1. Potential analysis,
2. Implementation concept and/or project management.

The funding is provided for management services that meet the funding stage requirements and are provided by authorised consulting firms.

Further information on the BMWi innovation vouchers “go-Inno” can be found at www.innovation-beratung-foerderung.de

Image: © BUP-PIXEL/stock.adobe.com



FUNDING PROGRAMME “ENERGY EFFICIENCY IN ECONOMY – GRANT AND KREDIT”

Federal Ministry for Economic Affairs and Energy (BMWi)

The new funding programme of the BMWi for Industry and Trade restructures all existing funding programmes for efficiency consulting financed by the BMWi as well as investment projects for energy efficiency and heat from renewable energies. The respective target groups are well addressed by the clearly structured programmes.

The general promotion strategy of the BMWi comprises four funding priorities: Energy consulting, energy-efficient buildings and energy efficiency in industry and commerce as well as heating infrastructure. All funding offers are assigned to these priorities. The funding components are modular and combinable.

For more information on individual funding programmes, please visit: www.deutschland-machts-effizient.de

One more possibility: QUALIFICATION OF YOUR TEAM

Many companies that have already implemented resource efficiency decide to continuously review processes, methods and products and to make them more efficient. Qualifications and training will then pay off at a later date. Your employees will receive the necessary know-how to stay on the ball in the future. In the following, we would like to introduce you to some further training possibilities.

QUALIFICATION COURSES OF THE VDI CENTRE FOR RESOURCE EFFICIENCY (VDI ZRE)

The VDI ZRE regularly offers qualification seminars. These are aimed at employees in companies, in particular, in the areas of production, development, quality assurance, environmental management or corporate management, as well as consultants.

The seminars are tailored to everyday business routine and provide fundamental insight into the topic of efficient use of resources. The participants learn with which instruments and methods

they can analyse potentials for increasing resource efficiency in the company. In addition, they receive the necessary know-how to carry out material and energy efficiency projects.

The range of qualification offers includes seminars that familiarise employees with the topic of resource efficiency, but also seminars that deal with specific topics such as resource efficiency through digitalisation or the application of material flow costing.

In addition, the VDI ZRE cooperates with various learning factories in Germany. In these offered seminars, the participants have the opportunity to deal with relevant questions and measures more perceptibly in a production-related environment.

An overview of all seminars can be found at:

www.qualifizierung-re.de.



TRAINING FOR APPRENTICES

The Energy and Resource Scout programme is a training offer from the chambers of industry and commerce (CCI). Commercial or technical apprentices can obtain further training in their IHKs on the topics of energy and resource efficiency as well as climate protection in the company.

In doing so, they not only learn the background of efficient technologies and procedures, but also

the application of measuring instruments in practice and the procedure for the collection and evaluation of energy and material flows.

In the nationwide training portal at www.wis.ihk.de, you can search for offers in your area or contact your CCI directly.

EDUCATION PROGRAMMES AND EVENTS OF THE "BILRESS NETWORK"

BilRessNetzwerk
Bildung für **Ressourcenschonung**
und **Ressourceneffizienz**

In the BilRess Network (Education for Resource Conservation and Resource Efficiency Network), stakeholders from politics, education and civil society work together to raise awareness of resource efficiency in all education sectors.

At the biannual network conferences, participants have the opportunity to get to know existing approaches, concepts, curricula as well as teaching and learning materials from all areas of education.

Furthermore, the website of the BilRess network provides access to educational materials and education programmes for schools, vocational training, higher education and professional development in the area of resource efficiency.

Further information can be found on the network website at www.bilress.de

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Overview: FURTHER INFORMATION ON THE SUBJECT



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VDI ZENTRUM RESSOURCENEFFIZIENZ (VDI ZRE)

The VDI Zentrum Ressourcen-effizienz (VDI ZRE) has the task of preparing information on environmental technologies and material- and energy-efficient processes in an easily understandable way. The aim is to help SMEs in particular to increase their resource efficiency. The instruments of the VDI ZRE for the evaluation

and presentation of resource efficiency potentials are prepared on behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and financed by means of the National Climate Initiative. They are available on the website www.ressource-deutschland.de for free:

Resource checks: Take the test and find out where your company can save.

Systematisation with process chains: Seize the opportunity to systematically and purposefully draw on project results and available technology in industrial processes.

Cost calculator: Identify potential savings in your use of materials and energy and get a hands-on introduction to resource-based costing.

Information database: Here, you will find good practice examples, project partners and useful addresses on the subject.

Innovation radar: Get an overview of current trends and innovative technologies.

Movies: Learn more about successful business stories at: www.ressource-deutschland.tv or on our own YouTube channel at: www.youtube.com/ressource-deutschland.de

Strategies and measures: Gain systematic access to different strategies and measures in implementing resource efficiency in operations.

Resource efficiency guide: Learn how to implement resource efficiency measures in your operations step-by-step, and discover which methods and tools can help.

Competence Pool Resource Efficiency: The competence pool offers cooperation and network partners from all over Germany a common platform for the work on the topic of resource efficiency. You get access to the websites of the participating initiatives and organisations of the federal and state governments.



NeRes NETWORK RESOURCE EFFICIENCY

The Resource Efficiency Network website provides many practical and concrete facts as well as resource efficiency information.

In addition, you will find information on the nationwide “Resource Efficiency on Site” event series, which besides having information and examples on resource efficiency offers an ideal platform for exchanging information with companies and experts.

Find out why resource efficiency is important, how you can identify potential in your business, and what methods are available to increase resource efficiency. Benefit from the experience of

other companies and network.

Become a member of the “Resource Efficiency Network” (NeRes). NeRes initiates the exchange of experiences on promising approaches to use resources efficiently.

The network brings together stakeholders from politics, companies, associations, science and society and develops proposals for the design of framework conditions that provide incentives and remove obstacles.

More information at: www.netzwerk-ressourceneffizienz.de

GERMAN MINERAL RESOURCES AGENCY (DERA)

The German Mineral Resources Agency (DERA) is the competence centre for raw materials and the central information and advisory platform for mineral and energy resources for the German economy.

DERA was founded in October 2010 and is part of the Federal Institute for Geosciences and Natural Resources (BGR). DERA can help you with the efficient use of raw materials and supplies with the following offers:

Review of price and supply risks of supplies and raw material import:

- Assessment of the production country risk
- Assessment of the company and country concentration of production
- Analysis of supply and demand trends
- Assessment of price risks

Assessment and support of measures for securing and diversifying raw materials:

- Initial consultation in the development of alternative strategies for securing raw materials
- Networking
- Advice on federal funding programmes

Assessment of the market situation of raw materials:

- Individual market research
- Statistics on global production, consumption, imports and prices
- Supply and demand scenarios

More information at: www.deutsche-rohstoffagentur.de

CCI AND CHAMBER OF TRADES AND CRAFTS

If you would like to discuss your idea with a competent local partner who knows your industry, or just wants to receive suggestions on resource efficiency, then take advantage of the services offered by your Chamber of Industry and Commerce (CCI) or Chamber of Trades and Crafts. Make an appointment according to your needs, free of charge.

Find your personal contact in your CCI with the CCI-Finder at: www.dihk.de/ihk-finder.

For your personal contact in the regional Chamber of Trades Crafts, visit the area “Skilled craft organisations” under: www.zdh.de

PIUS PORTAL

The PIUS portal provides companies with information on the services offered by the partner institutions on resource efficiency and production-integrated environmental protection. In addition to the overview of funding programmes for federal states, at the federal level and the EU, the portal offers a direct introduction to the tools offered by the partner institutions.

Further information can be found at: www.pius-info.de

- (1) **Marscheider-Weidemann, F.; Langkau, S.; Hummen, T.; Erdmann, L.; Espinoza, L. T.; Angerer, G.; Marwede, M. und Benecke S. (2016):** Rohstoffe für Zukunftstechnologien 2016. Auftragsstudie. 28 DERA Rohstoffinformationen. Deutsche Rohstoffagentur (DERA), Berlin.
- (2) **VDI 4800 Blatt 1: 2016-02:** Verein Deutscher Ingenieure e. V., Ressourceneffizienz - Methodische Grundlagen, Prinzipien und Strategien. Beuth Verlag GmbH, Berlin.

Im Auftrag des:



Bundesministerium
für Umwelt, Naturschutz
und nukleare Sicherheit



NATIONALE
KLIMASCHUTZ
INITIATIVE

Find out more about resource efficiency in companies as well as tools for analysing potential savings and useful tools for practical application on our website. Browse through our regular publications, start a resource check directly or look at examples of good practice:

www.ressource-deutschland.de

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