

## Funding priority r<sup>2</sup>:

### »Innovative Technologies for Resource Efficiency – Resource-Intensive Production Processes«

Using resources more intelligently and efficiently is a basic way to help safeguard Germany as an industrial producer. Particularly in economically difficult times, a high degree of resource efficiency will strengthen German industry's position as a global competitor. Alongside this economic significance, conserving resources is also important ecologically. For this reason, the German government's national sustainability strategy has set the target of doubling resource productivity by the year 2020 compared to 1994.

This is why the German Federal Ministry Education and Research (BMBF) is supporting the development of innovative efficiency technologies as part of its High-Tech Strategy and its Environmental Technologies Master Plan. The support programme »Innovative Technologies for Resource Efficiency – Resource-Intensive Production Processes« focuses on resource-dependent industries with a high use of raw materials because the largest leverage can be achieved here. Among others, these include the chemical industry, metal and steel making as well as the production of construction materials. Apart from the raw materials which are used in high quantities, strategically important ones which are irreplaceable for high-tech technologies are also considered, e.g. titan, indium or ruthenium.

Main topics in r<sup>2</sup> include the recovery of valuable metal fractions (for example antimony and tin) from waste streams, improving resource efficiency in the steel industry, energy- and resource-efficient forming and shaping processes for metals, improving drying processes in the ceramic industry and catalytic processes in the chemical industry as well as the development of innovative construction materials.

More information about the funding priority and the integration and transfer project can be found at:

[www.r-zwei-innovation.de](http://www.r-zwei-innovation.de)

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Innovative Technologies  
for Resource Efficiency –  
**Resource-Intensive  
Production Processes**



## Multiplying Resource Efficiency

Brief Outline  
of the Funding Priority

»Innovative Technologies  
for Resource Efficiency –  
Resource-Intensive  
Production Processes«



## SPONSORED PROJECTS

### Research projects

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#### 1 Recovery of valuable metal fractions from waste streams

Auto thermal metal recovery from WEEE scrap using energy-optimized zero-waste metallurgy

Better resource use and lower primary energy consumption in lead metallurgy

Dezincification of steel scrap

Shredder sand – recycling fine-grained non-ferrous metal phases from shredder sand

WAVE – Analysing secondary raw materials using microwave-assisted laser emission spectroscopy

Recovering metals and mineral products from mine dumps in the former copper mining district of Mansfeld, Germany

#### 2 Improving energy and material efficiency in metal production

##### Steel making

Optimized process control for resource-efficient production in the steel converting process

Increasing the energy and material efficiency of steel production in electric arc furnaces using optimized heat management and continuous dynamic process control

##### Slag treatment processes in primary metal production

Avoiding metal losses in metallurgical slag based on the example of copper recovery

Optimized resource efficiency in the steel converting process: Concentrating phosphorous and digestion of mineral residues containing phosphorous in liquid BOS slag

##### Forming and shaping metals

Resource efficiency with the belt casting technology for the production of HSD® steels

REFORM – Resource-efficient shaping processes for titanium and highly heat-resistant alloys

#### 3 Catalytic processes in the chemical industry

Improving the efficiency of chlorine production

ReAlSeIOx – Resource-efficient selective oxidation of alkanes in novel crystalline solid phases

#### 4 Drying and sintering processes in the ceramic industry

Dry Control – Development of a resource-efficient drying technology for ceramic products

Low-temperature sintering of porcelain for domestic and technical applications on ultra light, highly porous shelves

#### 5 Improving material efficiency using innovative construction materials

Building aggregates – Increasing resource efficiency in the construction sector by developing innovative technologies to produce high-quality building aggregates from secondary raw materials based on heterogeneous construction and demolition waste

Celitement – development of sustainable cement

#### 6 Closed-loop recycling in coating processes

New, resource-conserving efficiency technology for closed-loop recycling of metals and process water in tin plate production

ENSIKOM – Development, simulation and consistent implementation of more environmentally-friendly and cost-effective coating of complex plastic components

#### 7 Improving resource efficiency through innovative services

RESEFI – Network and internet-based Web platform on resource efficiency as a learning and application tool

### Accompanying research

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#### 8 Integration and transfer project

