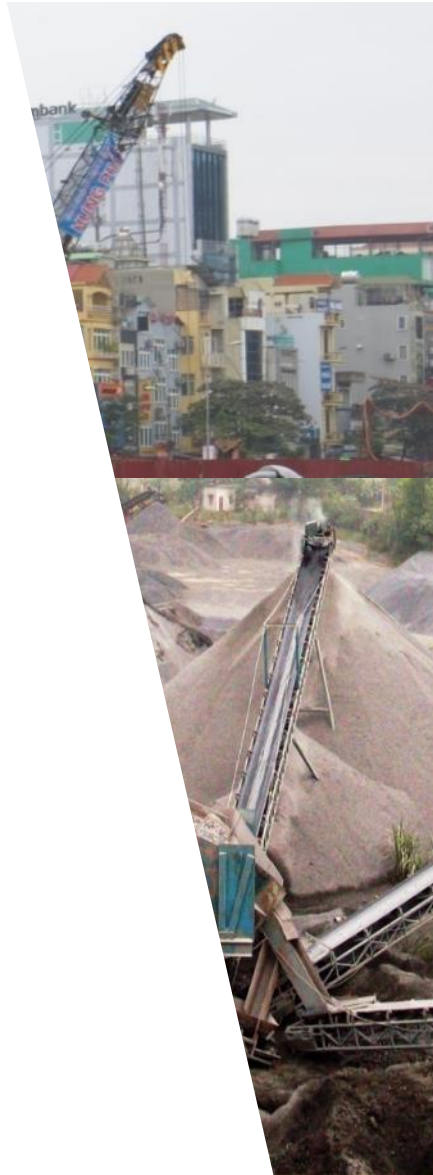


# MAREX Management of Mineral Resource Extraction – a Contribution to Sustainable Development in Vietnam

– The case of Hoa Binh Province –

**Dr. Pham Thi Viet Anh / Dr. Peter Wirth**  
**Ha Noi 3<sup>rd</sup> December 2015**



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# The Challenge



Drivers

- Economic growth in Vietnam
- Building boom (Ha Noi, HCM, ...)

Pressure

- Rising demand for building materials

State

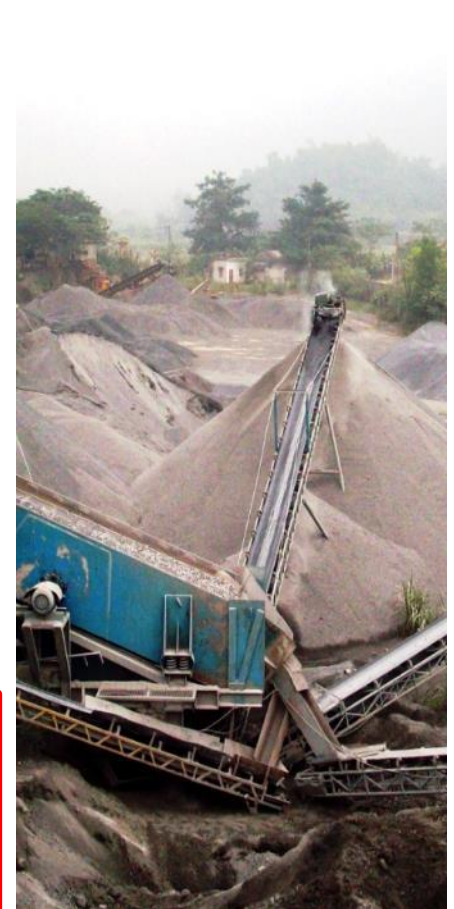
- Rapid increase of minerals extraction in the urban hinterland

Impact

- Landscape degradation, pollution, land use conflicts

Response

- Policies, development strategies, implementation



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Project MAREX

## Basic information

### **MAREX (Germany)**

- Approval July 2015
- Run-time 9/2015-8/2018
- Sponsored by BMBF (FONA)
- Coordinated by the Leibniz Institute of Ecological Urban and Regional Development in Dresden (IOER)
- Prof. Dr. Bernhard Müller

### **MAREX (Vietnam)**

- Approval October 2015
- Run-time October 2015
- Sponsored by MoST and Hoa Binh Government
- Coordinated by The Institute of Environment and Automation (IEA)
- Prof. Dr. Pham Ngoc Ho



# Project MAREX

## - Objectives -

- To enhance the **knowledge base** about the impacts of mining
- To improve the capacities of mining companies in **cleaner production technologies**
- To introduce methods of **material flow analysis**
- To establish a **business-policy interface** for the management of mineral resources



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development



# Study Area



SPONSORED BY THE

# Project MAREX

## – Research Partners in Germany –

- Leibniz Institute of Ecological Urban and Regional Development (IOER), Dresden
- Technical University of Dresden (TUD), Chair of Spatial Development
- Technical University of Dortmund, Department of Spatial Information and Modelling (RIM)
- C&E Consulting and Engineering GmbH, Chemnitz



SPONSORED BY THE

# Project MAREX

## – Research Partners in Vietnam –

### Main Research Partners

- The Institute of Environment and Automation (IEA), Ha Noi
- VNU University of Science, Vietnam National University, Hanoi; Research Centre for Environmental Monitoring and Modelling (CEMM)
- Province government Hoa Binh, Department of Natural Resources and Environment (Hoa Binh DoNRE)
- Quang Long Company of Construction and Trading, Hoa Binh
- Hop Tien Company of Trading and Construction & Transportation, Hoa Binh
- Binh Minh Joint Stock Company of Trading and Construction, Hoa Binh

### Others

- Institute of Geological Sciences, Vietnam Academic of Science and Technology
- Institute of Geological Technology and Minerals, Vietnam Union of Geological Sciences
- Department for Control of Mineral Activities-Nothern Region Branch
- Viet Nam Institute of Urban and Rural Planning, Ministry of Construction



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



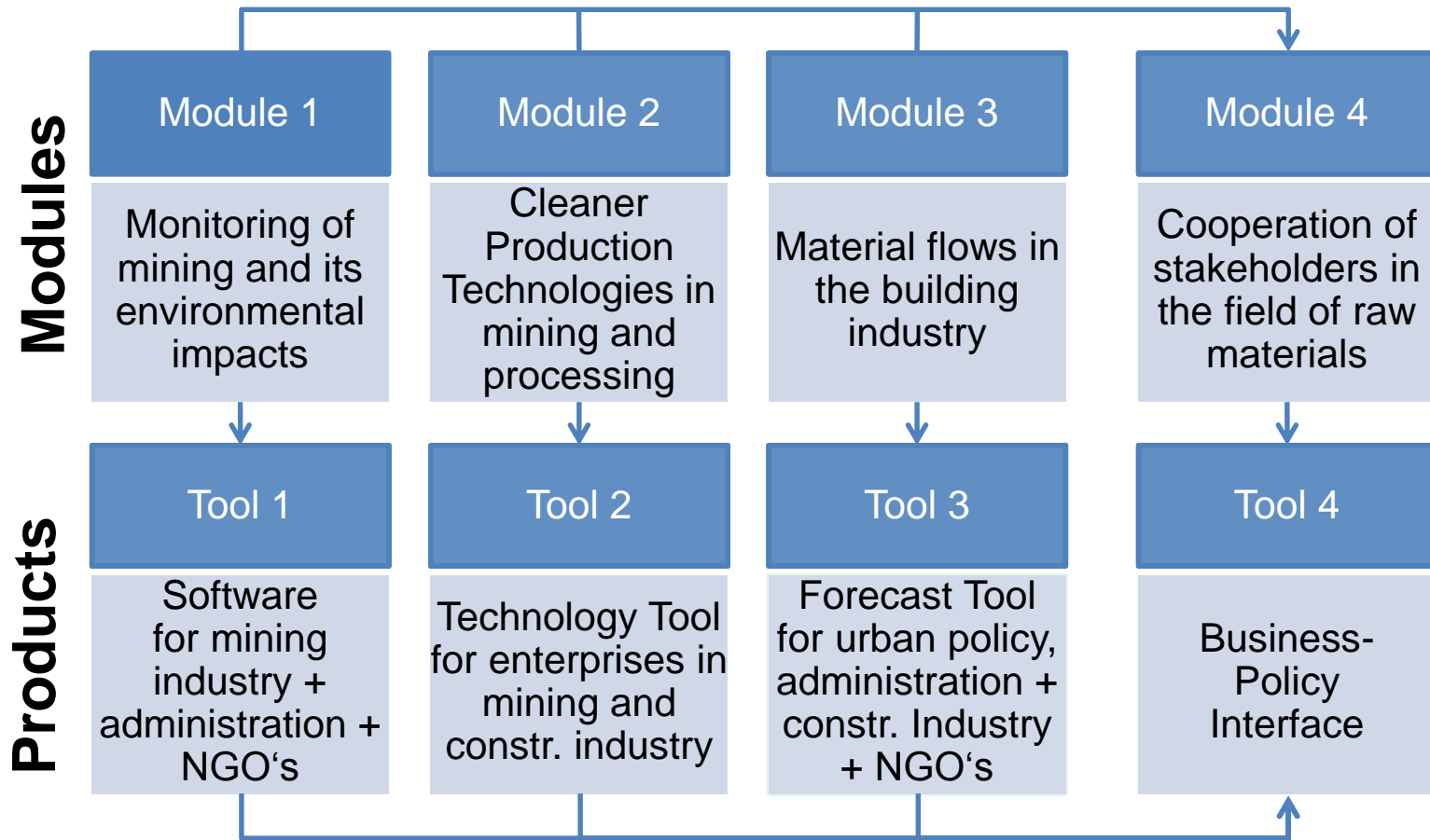
The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Project MAREX

## - Modules and Products -



SPONSORED BY THE



Federal Ministry of Education and Research



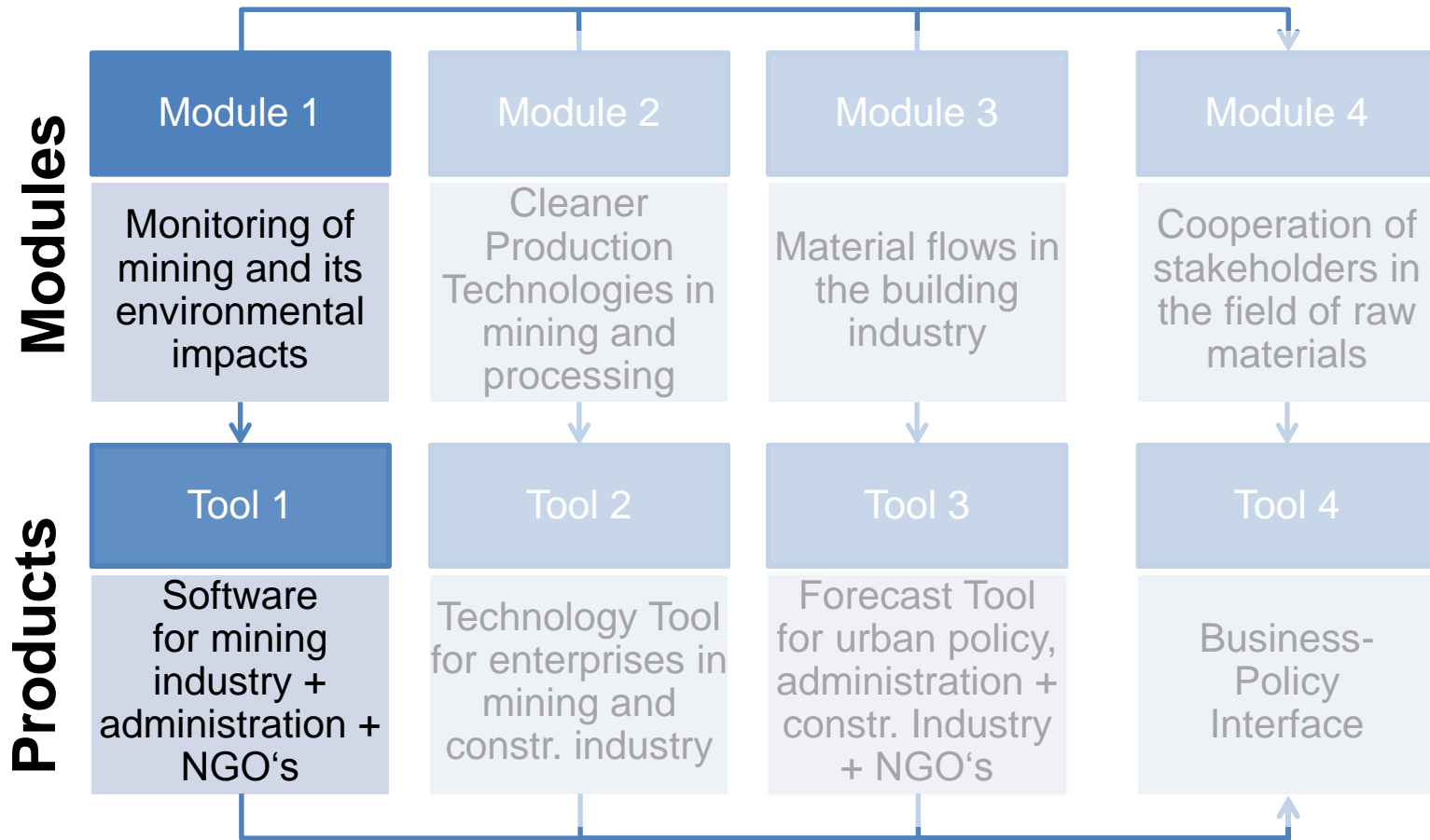
The Institute of Environment and Automation



Leibniz Institute of Ecological Urban and Regional Development



# Module 1



SPONSORED BY THE



Federal Ministry  
of Education  
and Research

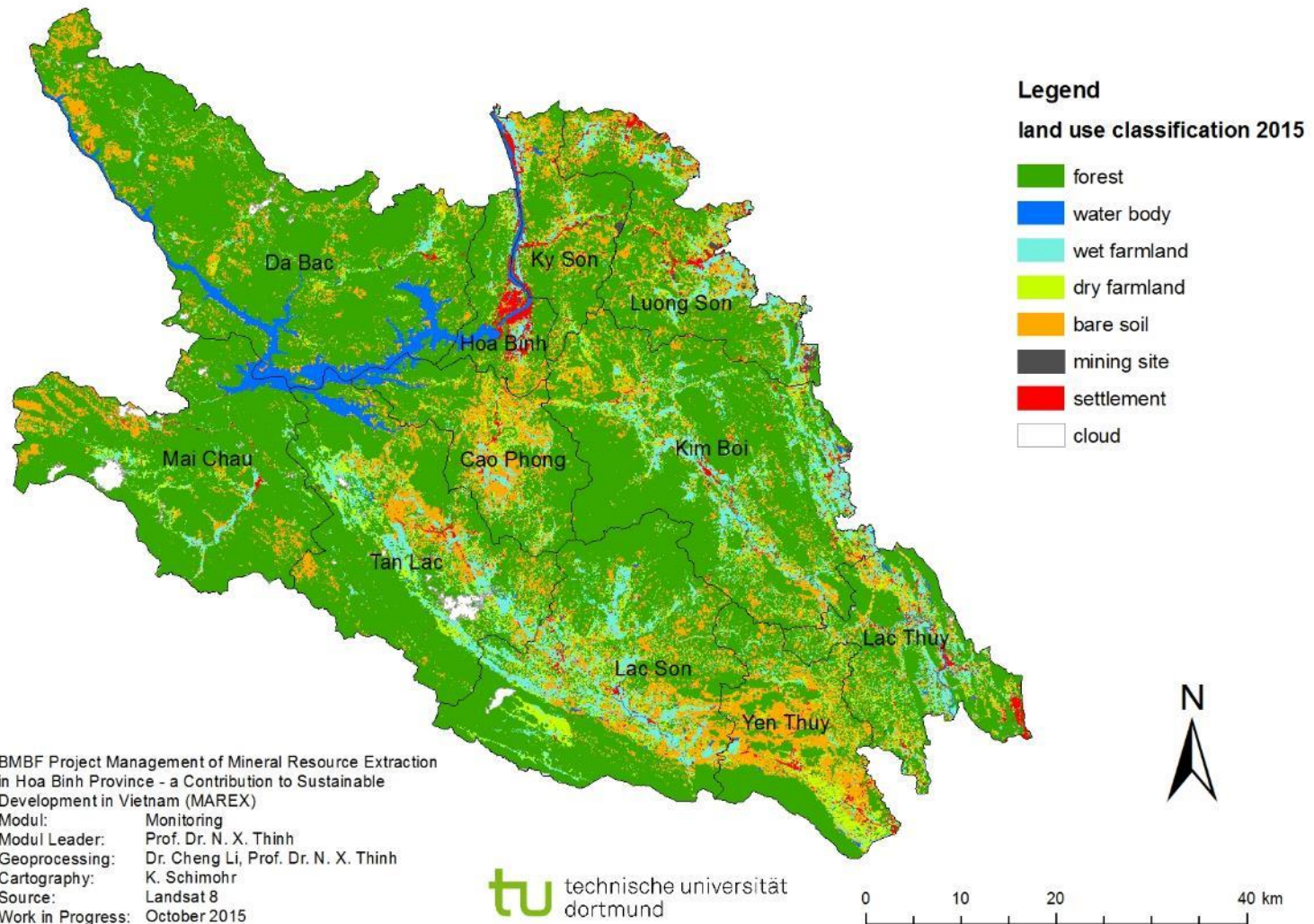


The Institute of Environment  
and Automation



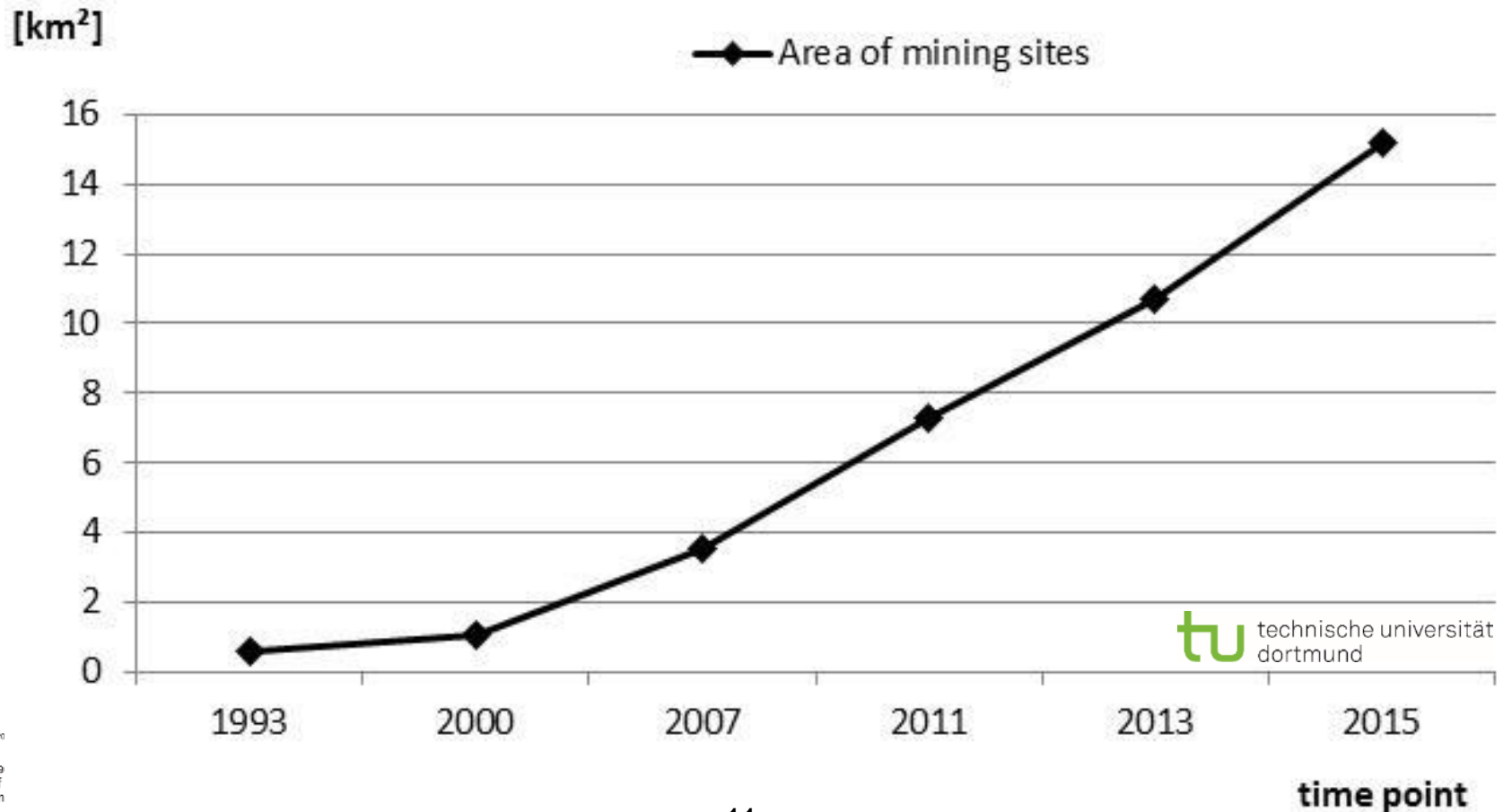
Leibniz Institute of  
Ecological Urban and  
Regional Development

# Land Use in Hoa Binh Province (Module 1)



# Land Use in Hoa Binh Province (Module 1)

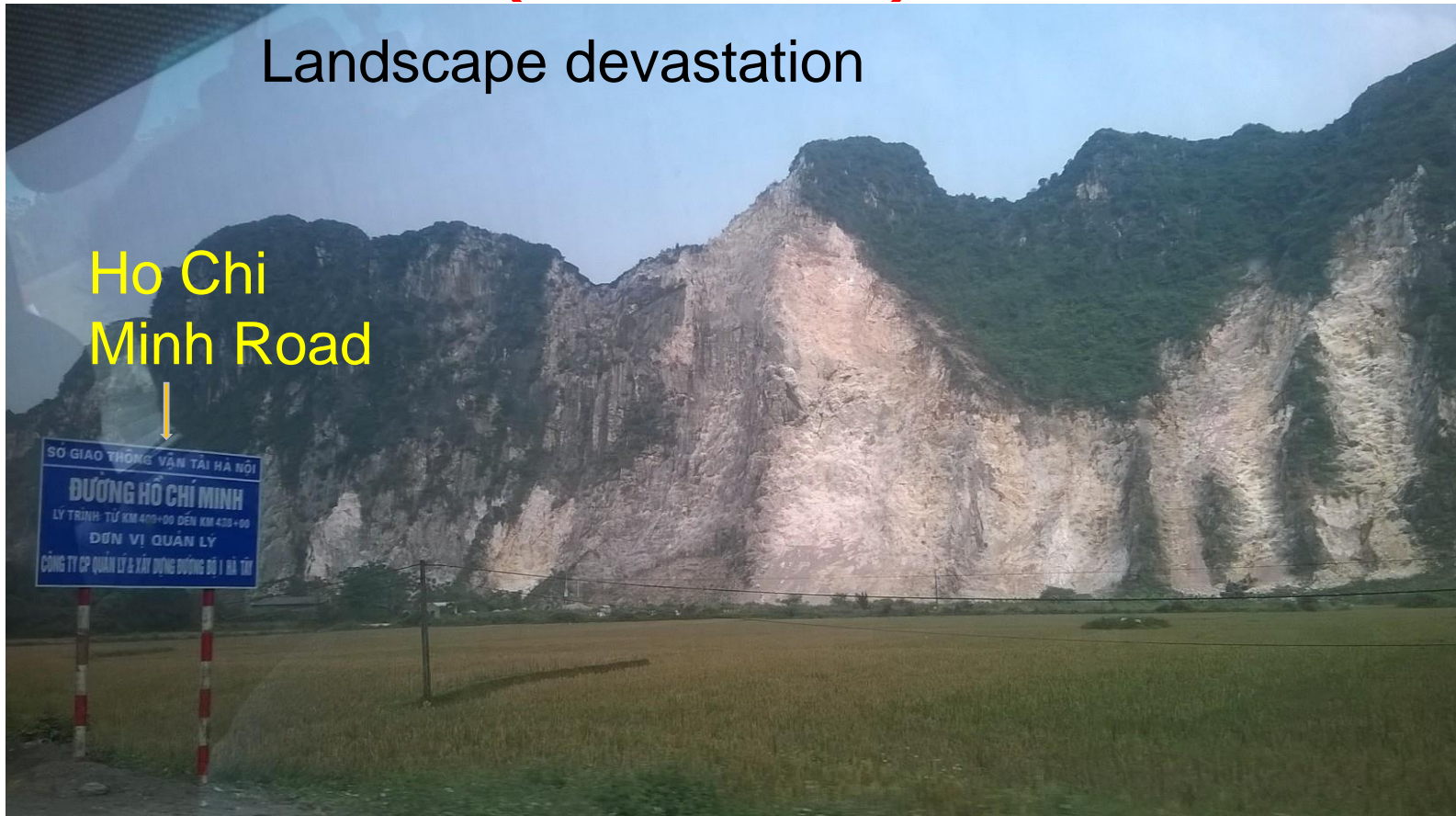
Development of area of mining sites in Hoa Binh – result of Landsat classification by TU Dortmund University, Prof. N. X. Thinh



# Negative Environmental Impacts (Module 1)

Landscape devastation

Ho Chi  
Minh Road



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development



# Negative Environmental Impacts caused by mining activities in Hoa Binh Province (Module 1)

- Landscape devastation
- Biodiversity loss
- Air, water pollution
- Soil erosion/slide



Monitoring/Assessment



Photo:  
Wirth/IOER

SPONSORED BY THE



# Module 1 – Output

- Maps of environmental quality (physic environment, biodiversity)
- Software (Data base, web-GIS)
- Air Quality Auto Mornitoring System

SPONSORED BY THE



Federal Ministry  
of Education  
and Research

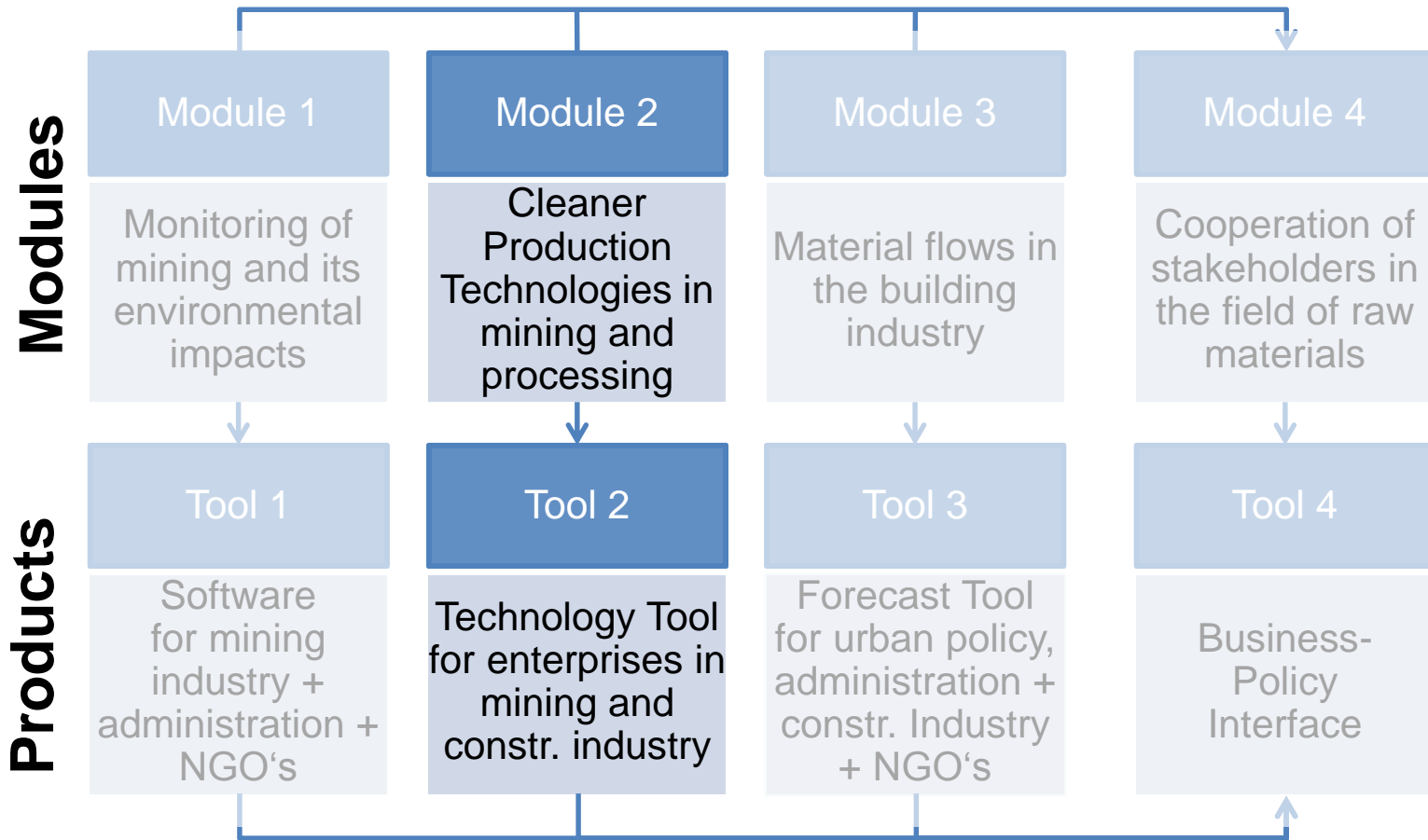


The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Module 2



SPONSORED BY THE



Federal Ministry of Education and Research

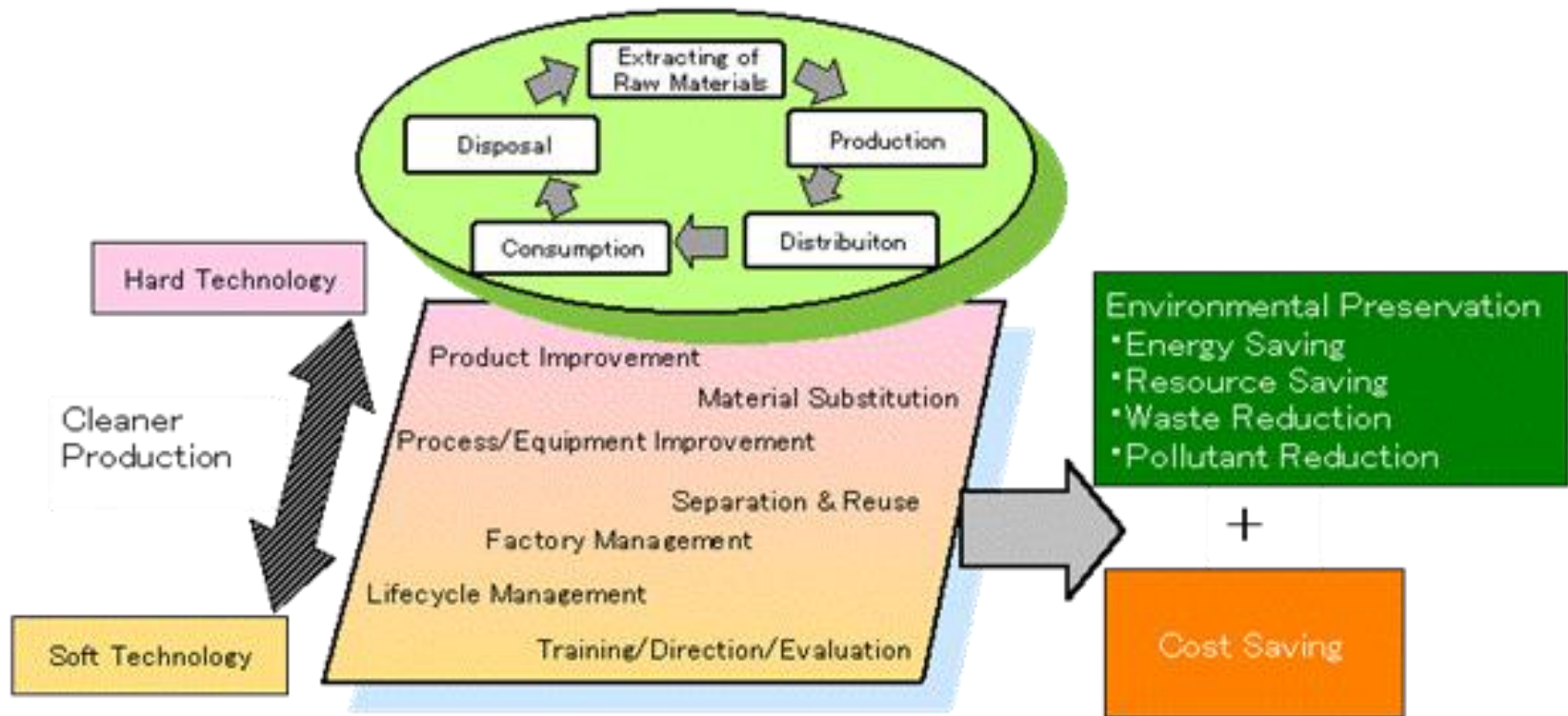


The Institute of Environment and Automation



Leibniz Institute of Ecological Urban and Regional Development

# Cleaner Production Concept (Module 2)



„Basic Concept of Cleaner Production“, Global Environment Centre Foundation, 1998

SPONSORED BY THE



Federal Ministry  
of Education  
and Research

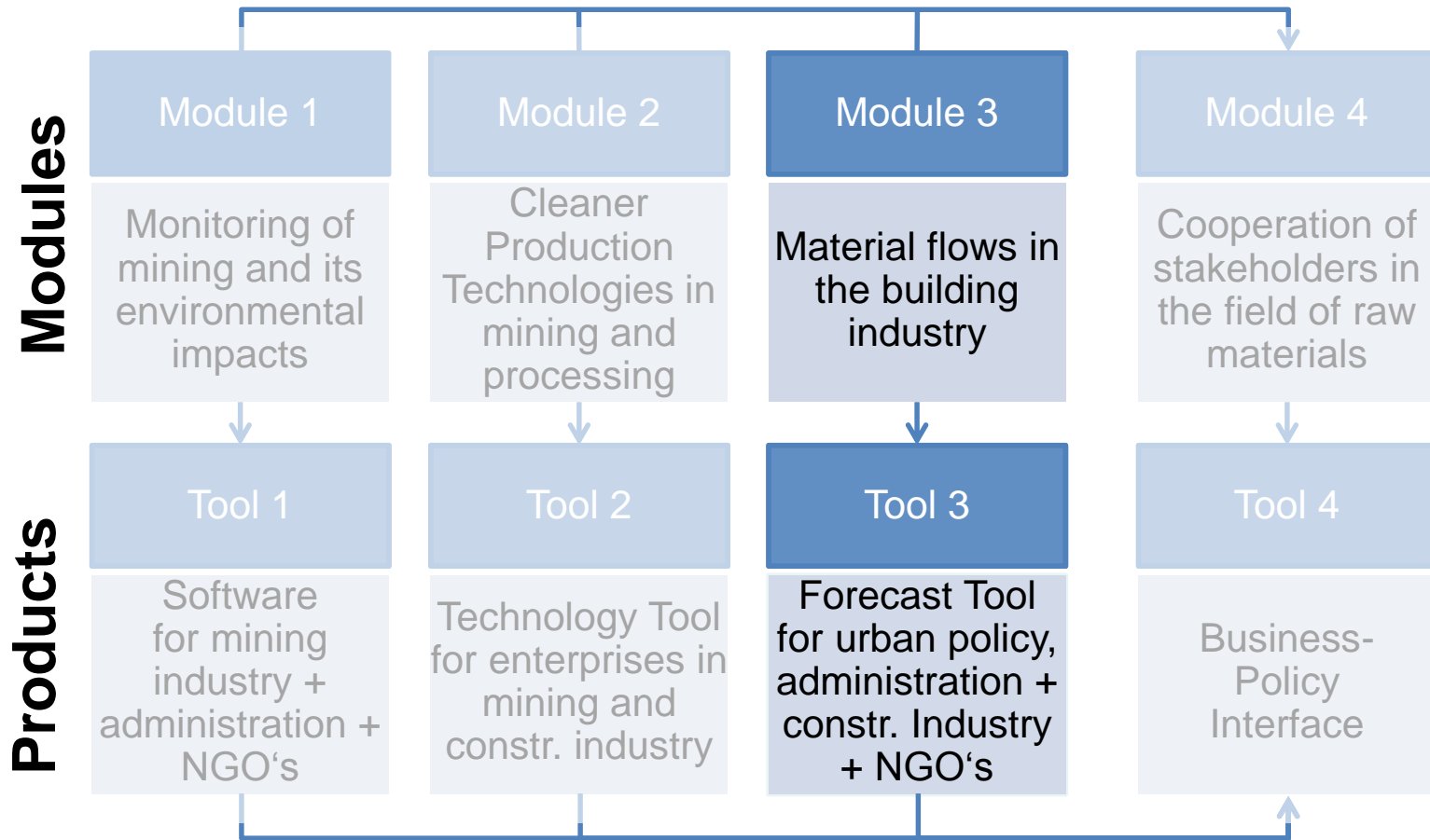


The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Module 3



SPONSORED BY THE



Federal Ministry  
of Education  
and Research

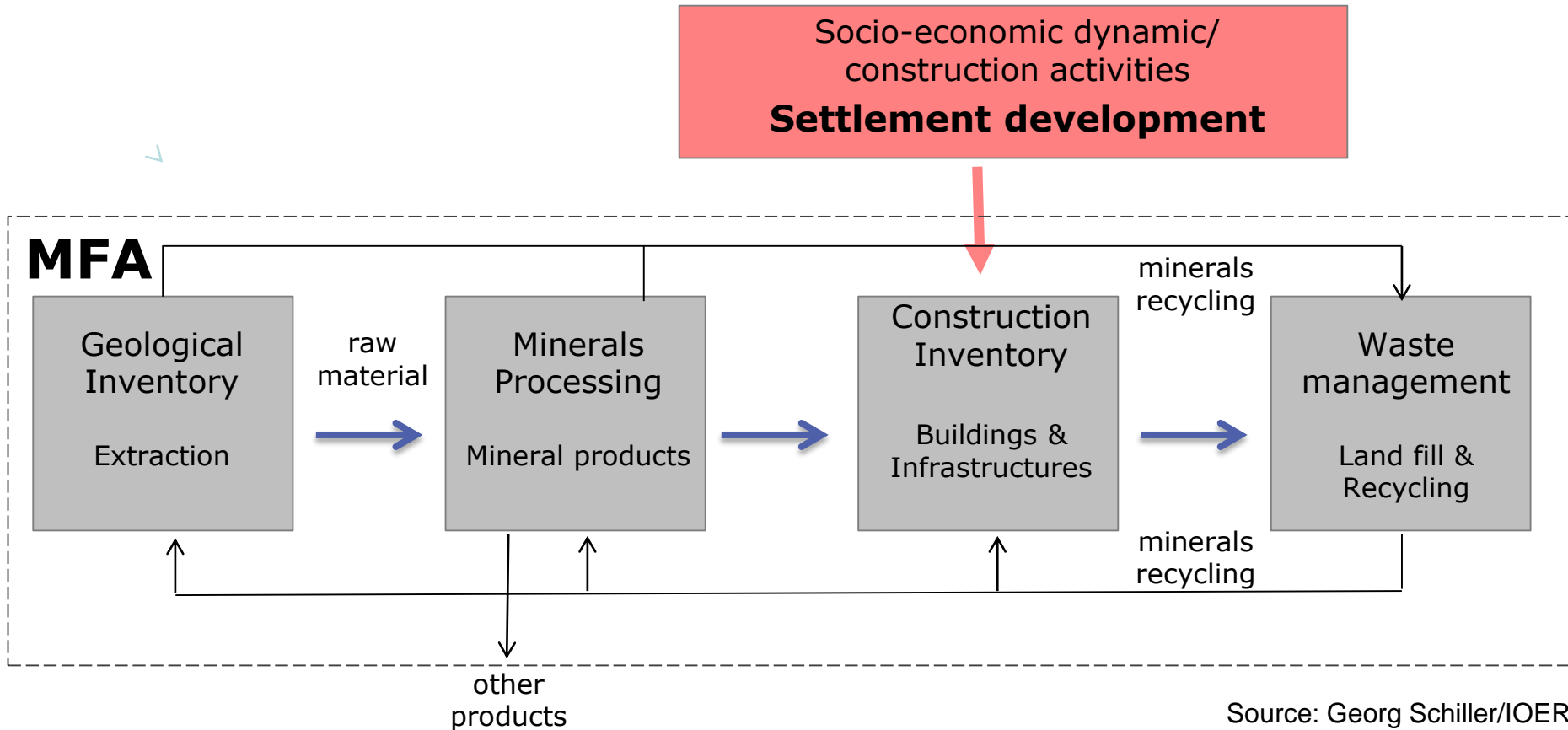


The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Concept of the Material Flow Analyses (MFA) in MAREX (Module 3)



Source: Georg Schiller/IOER

SPONSORED BY THE



Federal Ministry  
of Education  
and Research



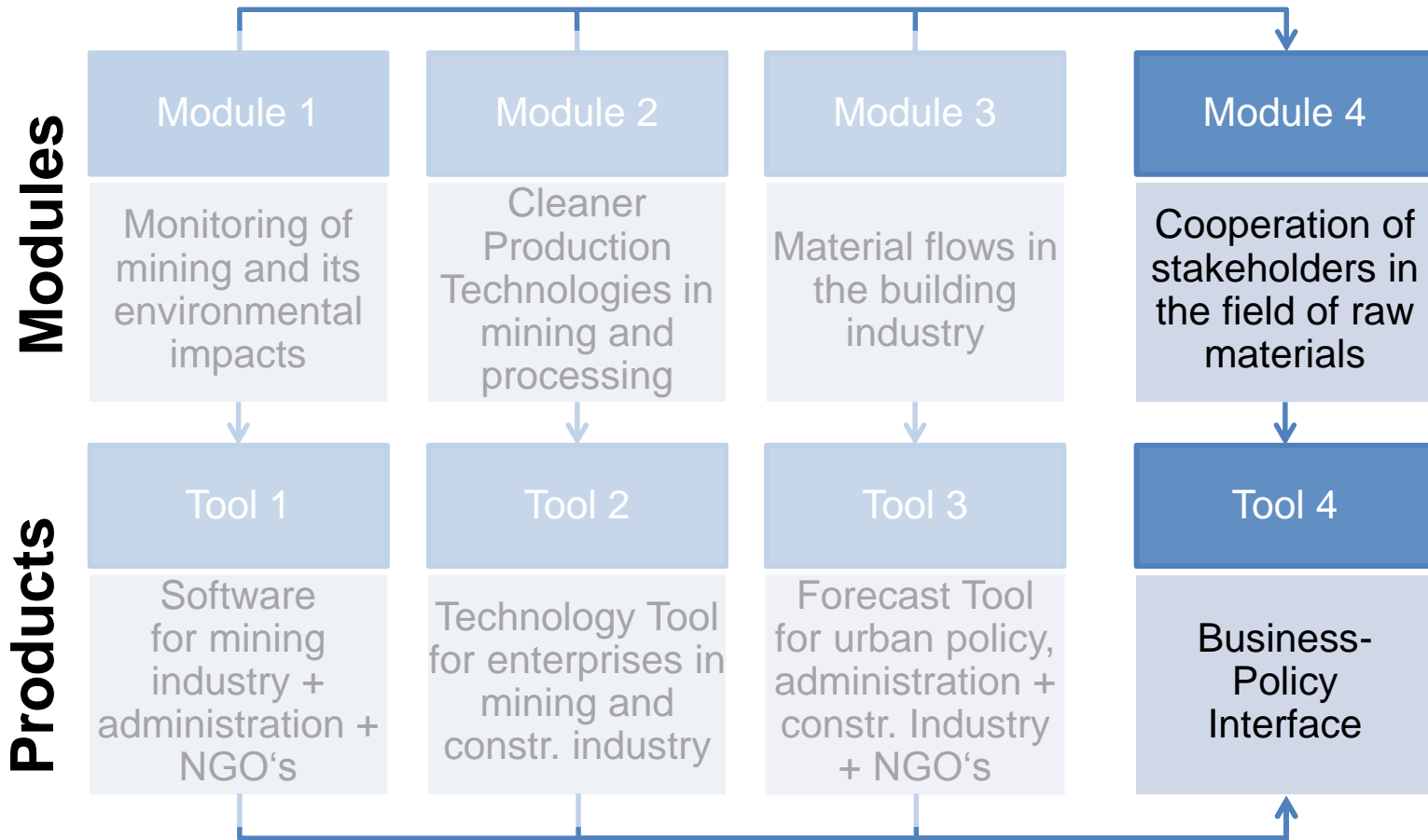
The Institute of Environment  
and Automation



Leibniz Institute of  
Ecological Urban and  
Regional Development



# Module 4



SPONSORED BY THE



Federal Ministry of Education and Research

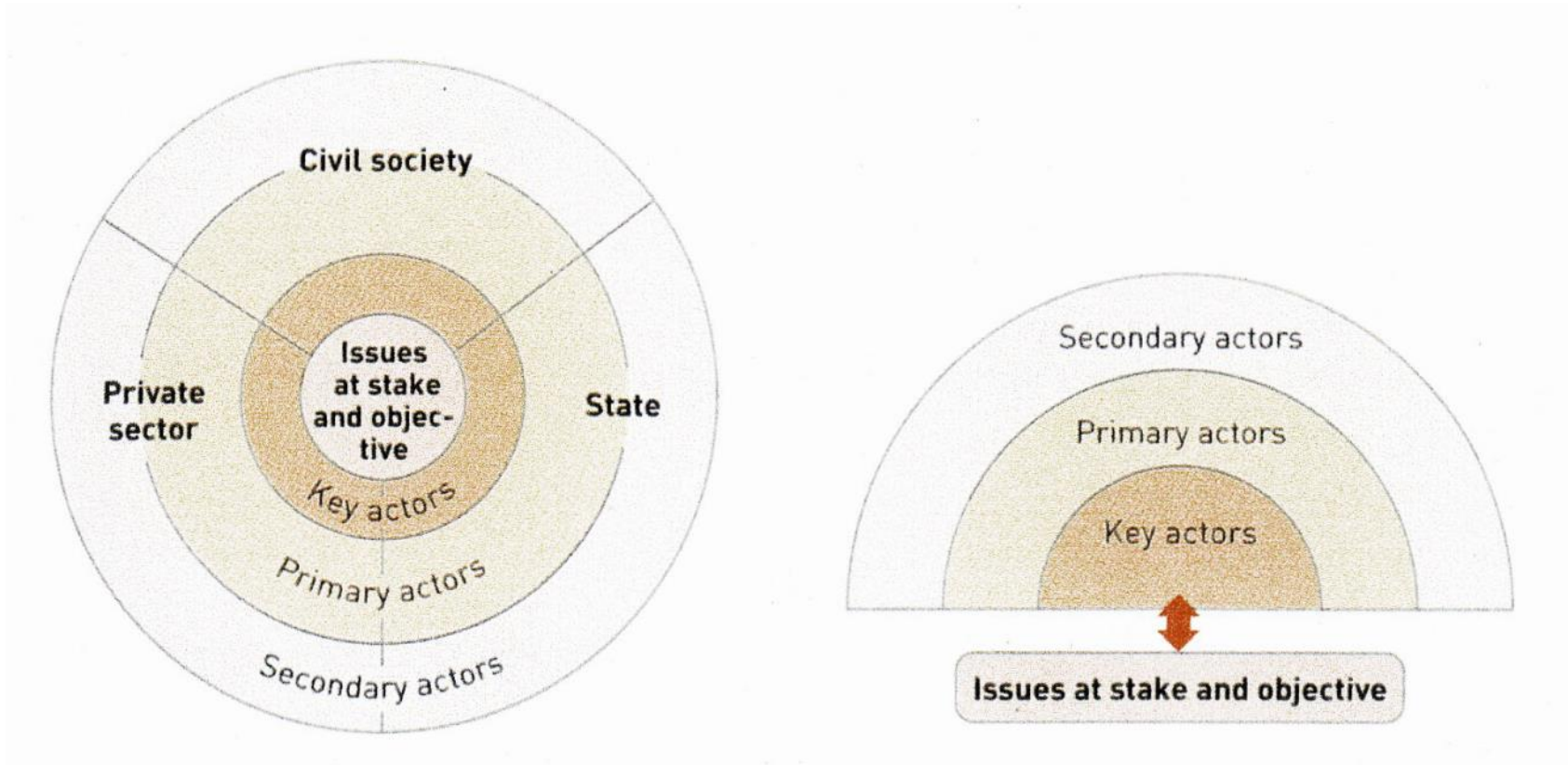


The Institute of Environment and Automation



Leibniz Institute of Ecological Urban and Regional Development

# Module 4: Business-Policy Interface



Map of actors (Source: GIZ 2015)

# Project MAREX

## – Addressees –

- National policy actors in the field of mining, land use planning and environmental planning
- Provincial governments and administration
- Local stakeholders (communes, wards)
- Companies in the construction and extractive industries
- Non-governmental organisation in the field of environmental protection, natural protection, and civil rights

# Project MAREX

## – Significant –

- To contribute to the sustainable development in Viet Nam
- To provide a scientific basis for application in construction material industries in the whole of the country (based on a model case of Hoa Binh)

SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The Institute of Environment  
and Automation

22



Leibniz Institute of  
Ecological Urban and  
Regional Development

# Project MAREX

## - Expected Products and Impacts -

### Products (Outputs)

- Scientific Publications
- Guidelines/Practice tools
- Discussion Platform
- Training for Graduate students and local actors

### Impacts (Outcomes)

- Knowledge gain
- Learning about material flows
- Behaviour change of actors
- ...



# Thank you for your attention!

Dr. Pham Thi Viet Anh

The Institute of Environment  
and Automation (IEA),  
Vietnam

Dr. Peter Wirth

Leibniz Institute of Environmental  
Urban and Regional Development  
(IOER), Germany

