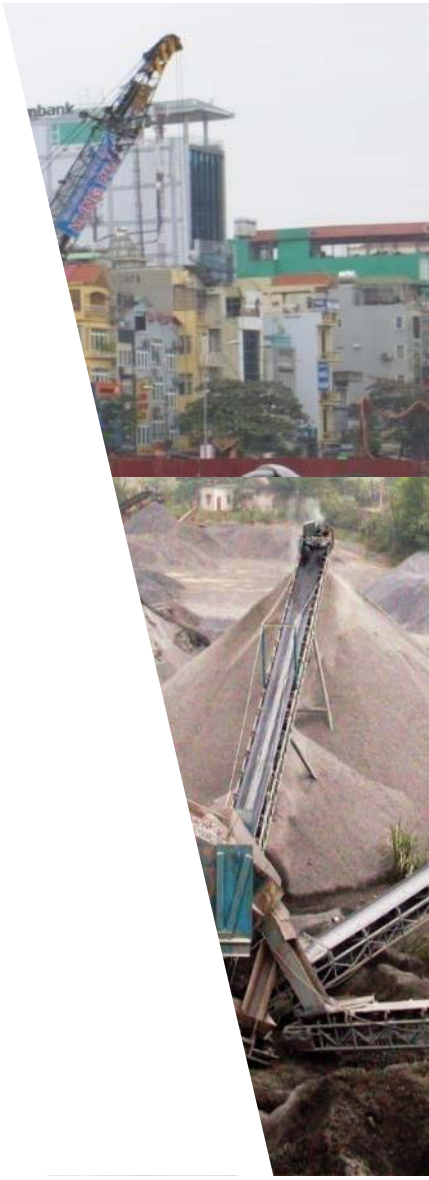
MAREX

Problem Definition and Structure of the Project

Dr. Peter Wirth / Anh Minh Vu

Dresden, June 28, 2016



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Background I

Urban growth

- Urbanization is a global trend
- UN in 2015: Up to 2030 more than 60 % of the worlds population is living in cities.
- Highest growth rate in newly industrializing nations (China, India)
- Vietnam: 2035: > 50% of the population will live in cities

  (Vn Government 2009; World Bank, MPI 2016)

Background II

Political strategies and concepts

- Sustainable Development Goals (UN 2015)
  - No 11: Sustainable Cities and Communities
- Initiative "A resource-efficient Europe" (EU 2011)
- Germany:
  - National Resource Efficiency Strategy
  - FONA/Initiative Client: International Partnerships for Sustainable Technologies and Services for Climate Protection and the Environment
- Vietnam:
  - Decision of PM on National Green Growth Strategy (2012)
  - Law on Environmental Protection (2014)

Challenges in research activities concerning MAREX

Driving Forces
- Economical growth in Vietnam
- Construction boom, Satellite cities (Ha Noi, HCM, …)

Pressure
- Increasing demand of construction materials

State
- Rise of mining operations in surrounding regions

Impact
- Devastation of landscapes, emissions, waste, land-use conflicts

Response
- Political concepts and strategies
- Implementation in practice

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Environmental challenges in mining and quarrying

- Damage of scenic places & landscapes
- Habitat loss
- Biodiversity loss

→ Impacts on tourism and recreation

→ Impacts on nature conservation

Environmental challenges in mining and quarrying

- Contamination of surface and groundwater (turbidity)
- Changes in flow rates of surface and ground water

→ Impacts on landscape water regime

→ Impacts on water supply of communities

→ Impacts on agiculture

Environmental challenges in mining and quarrying

- Land degradation
- Impacts of landfills to soil and water
- Wind and water erosion

→ Impacts on soil fertility
→ Impacts on agriculture
→ Impacts on biodiversity

Environmental challenges in mining and quarrying

- Air pollution (dust)
- Noise emission
- Vibration

→ Impacts on local residents
→ Impacts on tourism and recreation
→ Impacts on nature conservation

Project MAREX

- General Information -

MAREX (Deutschland)

- Permission: July 2015
- Period: 9/2015 to 8/2018
- Supported by BMBF (FONA)
- Lead: Leibniz Institute for Ecological Urban and Regional Development, Dresden (IOER)
- Prof. Dr. Bernhard Müller

MAREX (Vietnam)

- Permission: December 2015
- Period: 01/2016 to 12/2018
- Supported by MoST & Province of Hoa Binh
- Lead: Institute of Environment and Automation, Hanoi (IEA)
- Prof. Dr. Pham Ngoc Ho

Project MAREX

- Objectives -

- **Monitoring** of mining and its environmental impacts
- improve the capacities of mining companies with regard to the application of **Cleaner Production Technologies**
- Introduction of methods of **material flow analysis**
- Establishment of a communication platform **(Business-Policy Interface)** for sustainable management of mineral resource extraction

Research Area

Study Area Hà Nội and Hòa Bình

City
Town
Motorway
Primary road
Secondary road
Urban area
Railway
Water

Leibniz Institute of Ecological Urban and Regional Development

Geodata:
© OpenStreetMap contributors (ODbL) 2013, 2016,
Urban Areas © NaturalEarth Version 2.0
Map: Schinke, Witschas, Wirth © IOER 2016

Project MAREX

– Cooperating Partners in Germany–

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

Project MAREX

– Cooperating Partners in Vietnam –

Project partners

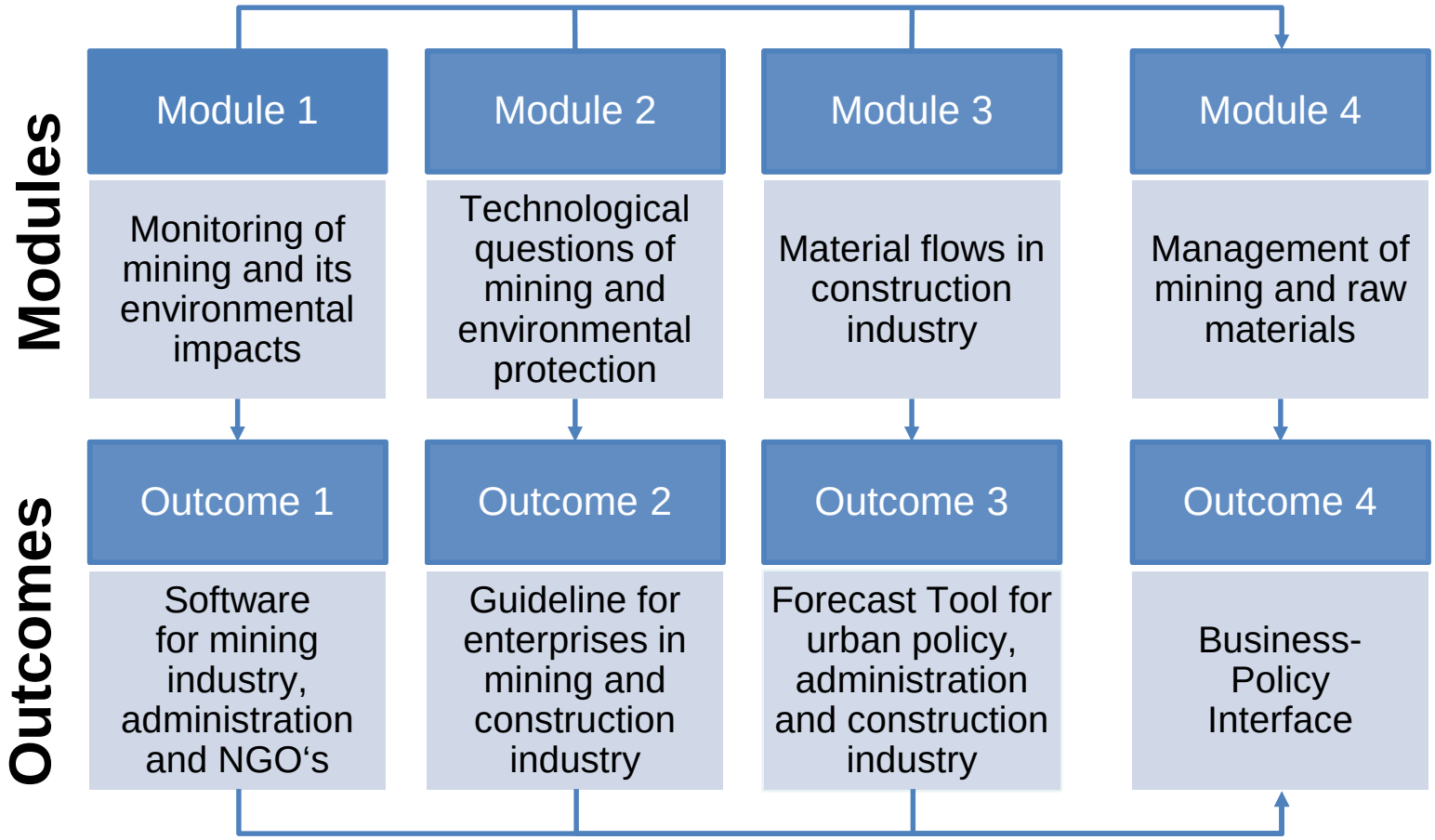
- The Institute of Environment and Automation (IEA), Ha Noi
- VNU University of Science, Vietnam National University, Hanoi; Research Centre for Environmental Monitoring and Modelling (CEMM)
- Province government Hoa Binh, Department of Natural Resources and Environment (DoNRE)
- Quang Long Company of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

Further partners

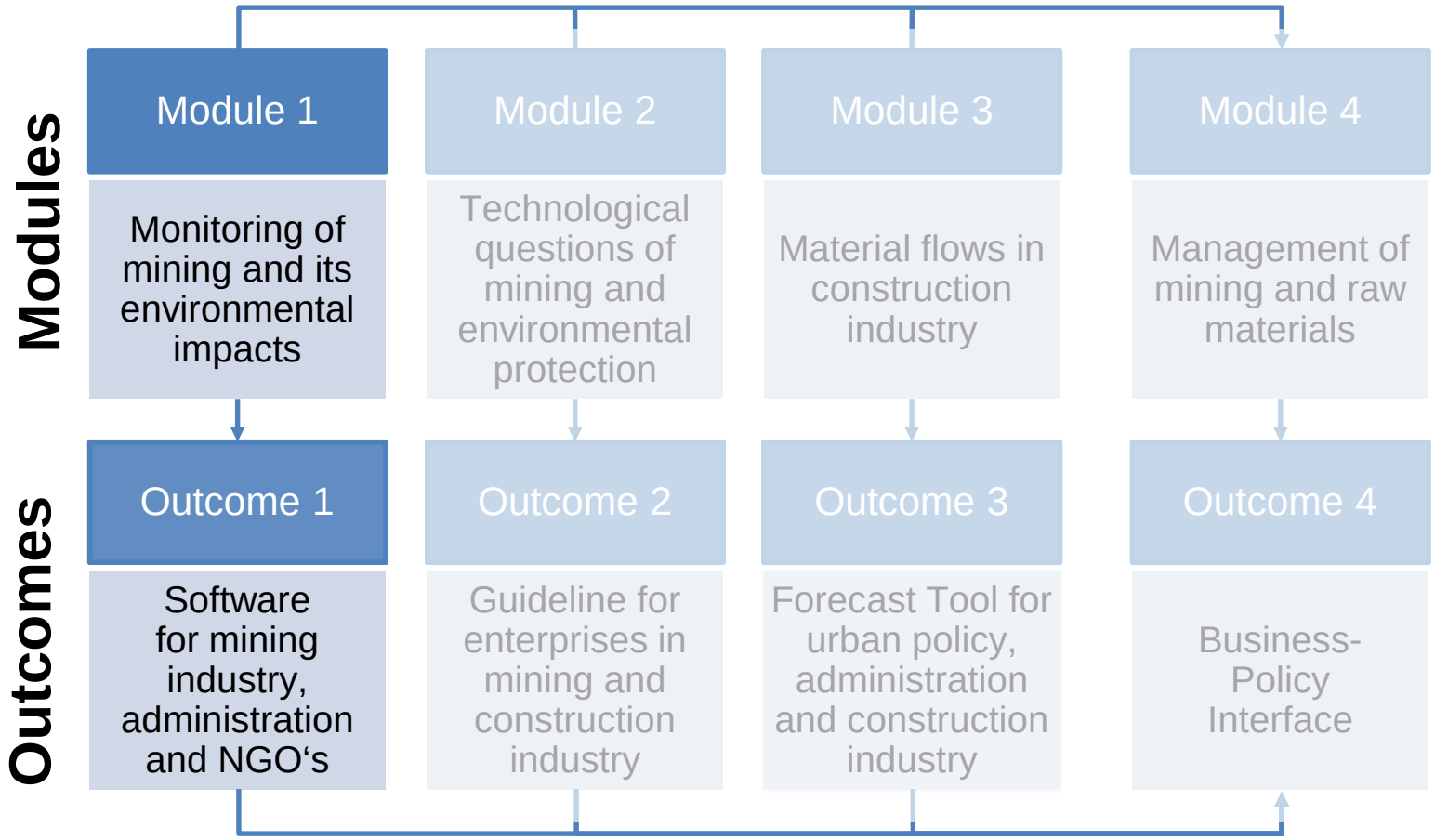
- Institute of Geological Sciences, Vietnam Academy of Science and Technology
- Institute of Geological Technology and Minerals, Vietnam Union of Geological Sciences
- Department for Control of Mineral Activities-Northern Region Branch
- Viet Nam Institute of Urban and Rural Planning, Ministry of Constr.

Project MAREX

– Modules and planned outcomes–



Module 1


Modules
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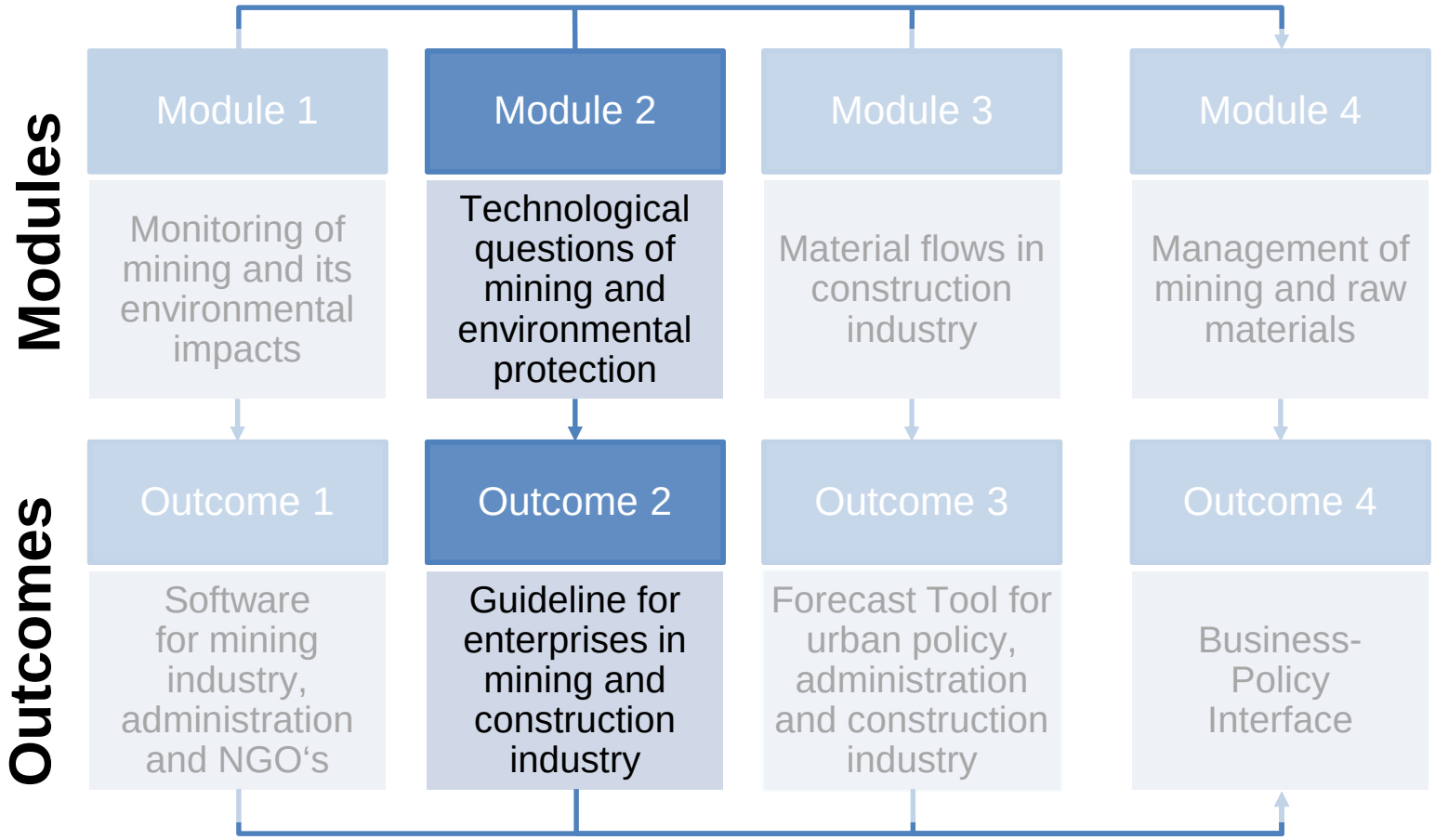
Module 2
Module 3
Module 4
Monitoring of mining and its environmental impacts
Technological questions of mining and environmental protection
Material flows in construction industry
Management of mining and raw materials
Outcomes
Outcome 1
Outcome 2
Outcome 3
Outcome 4
Software for mining industry, administration and NGO‘s
Guideline for enterprises in mining and construction industry
Forecast Tool for urban policy, administration and construction industry
Business-Policy Interface

Module 2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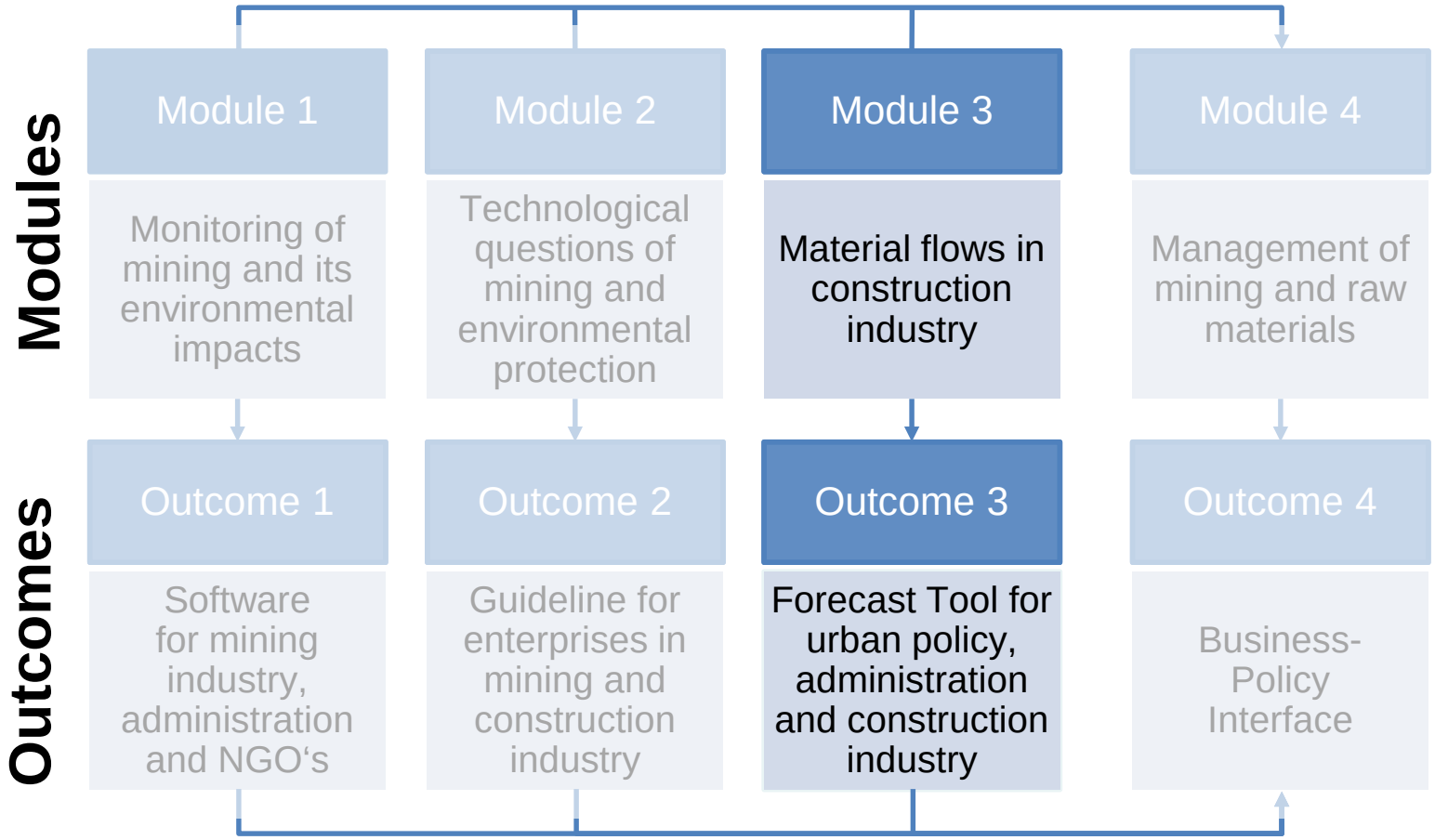
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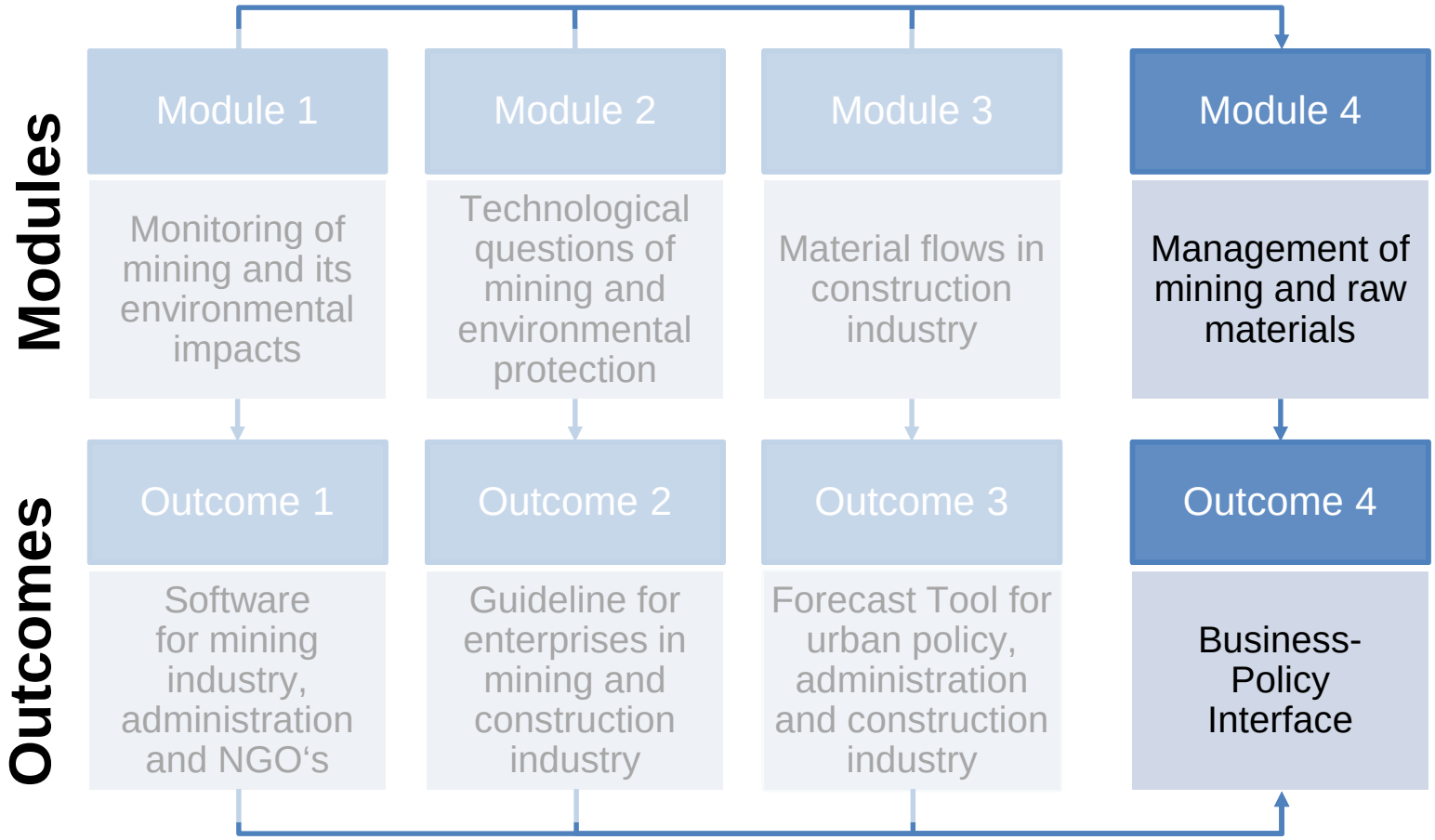
Module 4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Project MAREX
– Target groups –

- Political players in mining, land use planning and environmental planning (national level)
- Provincial administration
- Local policy makers and administrations
- Companies in construction and raw materials industry
- NGO's in environmental protection and nature conservation as well as civil society organisations
- Universities and research institutes

Thank you for your attention!

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