

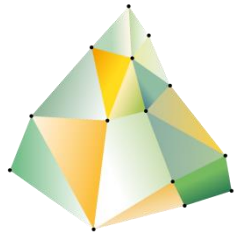


# Results of Innovation-Policy Discussions of Day 1

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MIN-GUIDE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 689527



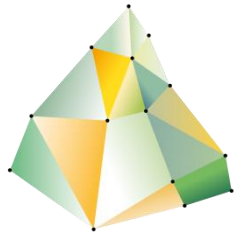
# Reflections on Day 1

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## Challenges/ambition from Commission

- Industrial Strategy – smart, innovative, sustainable
- Low Carbon and Circular Economy
- Sectoral contribution to all SD goals
- New Business models - extending value chain
- Cross-sector working – challenge-led, agile, with European-base for high-value parts of supply chain, e.g. European Batteries Alliance.





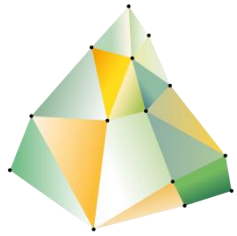
# Reflections on Day 1

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## Where we are now

- Challenges of meeting current and future minerals' demand
- EU vs non-EU resources – EU resources not being exploited giving security and sustainability issues
- EU operations – planning, permitting and social licence to operate all problematic





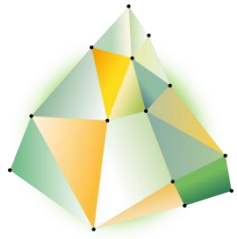
# Reflections on Day 1

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## Innovation Highlights

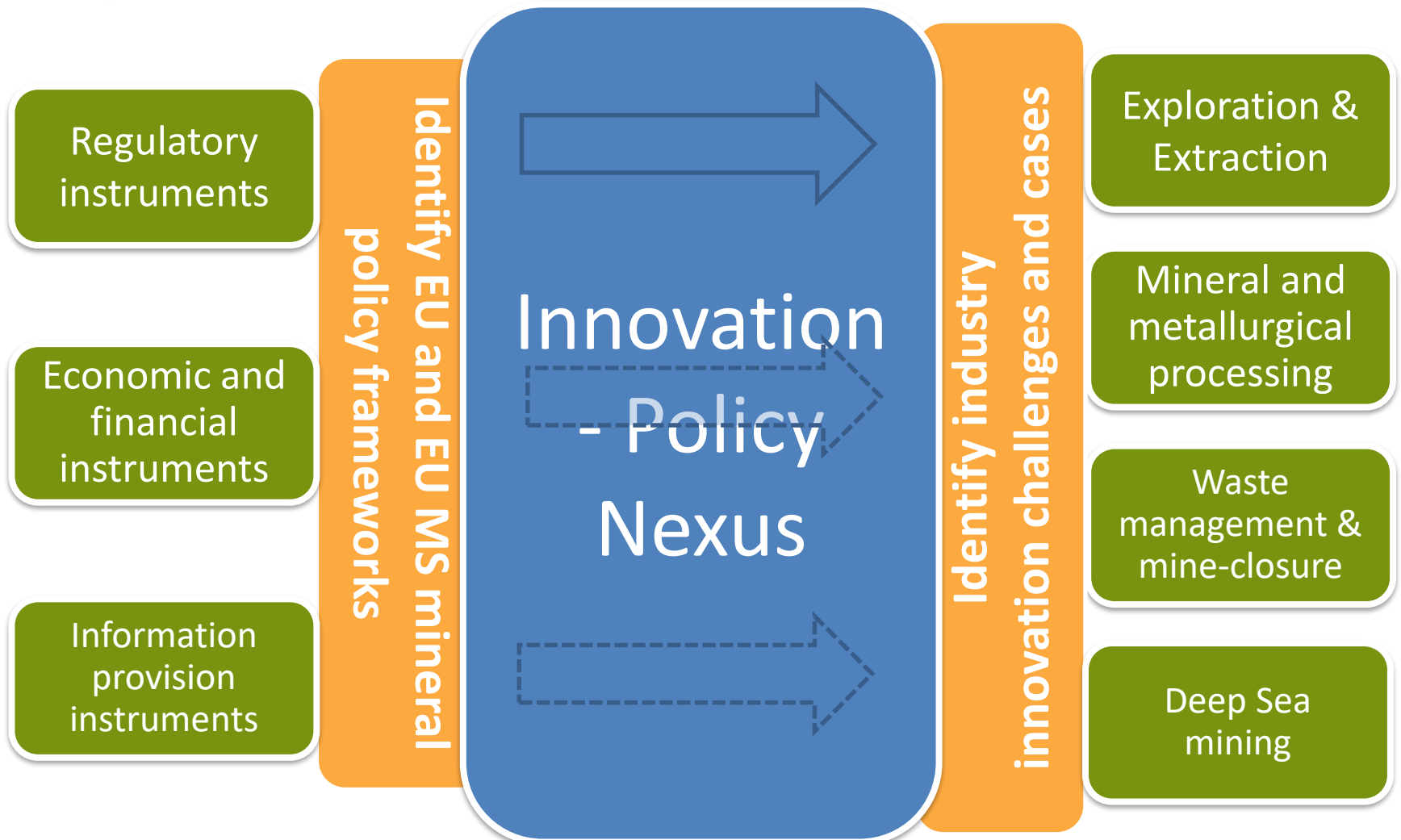
- The Sector is delivering innovation
- But focus is on process – need more on product, marketing, organisational, system innovations
- Red Mud!

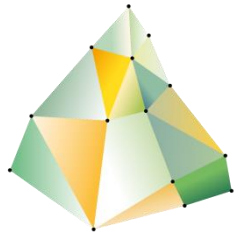




# Innovation-friendly mineral policy

## MIN-GUIDE Innovation-Policy Nexus





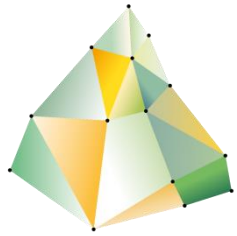
# Reflections on Day 1

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## Policy gaps to close:

- Between where we are now and long term vision – acknowledge trajectory of change and look forward
- Between high-level strategy and on-the-ground operations
- Integration between minerals producers and users in value chain





# Reflections on Day 1

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## Issues to address

- Perception of sector
- Links between policies at different levels
- Managing strategic direction
- Complexity/systems perspective
- Appetite for risk

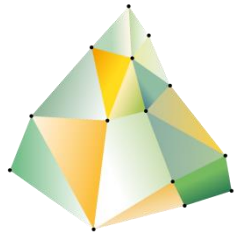




# The Policy Spin

What Policies are needed  
to foster Innovative Future  
Minerals Production?



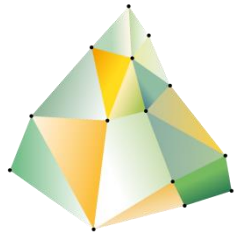


# Barriers to Innovation

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- **Uncertainty** - demand from the market, return on investment/payback period for eco-innovation
- **Finance** - Lack of funds within the enterprise or access to subsidies and fiscal incentives
- **Lack of policy incentives** in regulations and structures to eco-innovate
- Technical and technological **lock-ins/path dependency** (e.g. old technical infrastructures)
- Lack of **skills** - qualified personnel and technological capabilities within the enterprise
- **Market entry** – market dominated by established enterprises
- Limited access to external **information and knowledge**
- **Lack of collaboration** with research institutes and universities



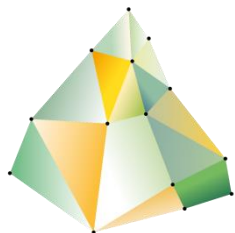


# Drivers of Innovation

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- Expected future increases in energy prices
- Current high energy prices (incentive to use less energy and reduce cost)
- Current high material prices (incentive use less material and reduce cost)
- Good business partners
- Access to existing subsidies and fiscal incentives
- Technological and management capabilities within the enterprise
- Increased market demand for green products
- Expected future material scarcity
- Good access to external information and knowledge, including technology support services
- Expected future regulations imposing new standards
- Collaboration with research institutes, agencies and universities



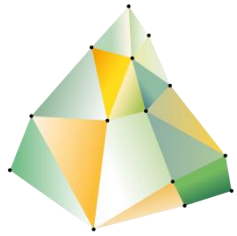


# What does success look like?

Overarching aim	Sub-criteria	Corresponding sustainability dimension(s)
<b>The secure and sustainable supply of minerals in the EU</b>	<ul style="list-style-type: none"> <li>• <b>Resource security</b>, balancing short and long-term resource needs (e.g. through strategic use of critical minerals and harmonisation of goals across different policy areas and removal of barriers)</li> </ul>	Economic Social Environmental
	<ul style="list-style-type: none"> <li>• <b>Economic sustainability</b>: To support the economic sustainability of the minerals and mining industry in the EU, including jobs and profitability (e.g. through maintaining competitiveness).</li> </ul>	Economic
	<ul style="list-style-type: none"> <li>• <b>Environmental sustainability</b>: To minimise the environmental impacts of waste and other activity in the minerals and mining sector (e.g. minimising waste and maximising material recovery through improved resource efficiency and resource management).</li> </ul>	Environmental
	<ul style="list-style-type: none"> <li>• <b>Social responsibility</b> (at all stages of the value chain); health and safety; CSR; jobs; welfare; wellbeing.</li> </ul>	Social
	<ul style="list-style-type: none"> <li>• <b>Good governance</b>; shared and differentiated responsibility; co-management and cooperation; transparency; public acceptance; accountability.</li> </ul>	Social (Institutional /procedural)

Table 6, The MIN-GUIDE common approach. Deliverable 1.1





# Good practice

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- social responsibility
- good governance
- environmental sustainability
- resource security
- economic security

social

environmental

economic





# Future scenarios for the world of raw materials 2050

Scenario 1:

## SUSTAINABILITY ALLIANCE

A new generation puts sustainability above everything else to keep deposits for future generations.



<http://is.fhg.de/INTRAW2>

political leaders form an alliance to push reforms that focus on increasing sustainability



there is only green mining and a reduced consumption of primary raw materials



environment-friendly way of producing with the aid of green technologies



increased use of high tech for exploration and extraction



substantial progress in re-use, recycling and substitution of materials





# Future scenarios for the world of raw materials 2050

Scenario 2:

## UNLIMITED TRADE

Increased global consumption leads to raw materials growth.



<http://s.fhg.de/INTRAV2>

increased demand for raw materials due to growing consumption



integration of processing industry



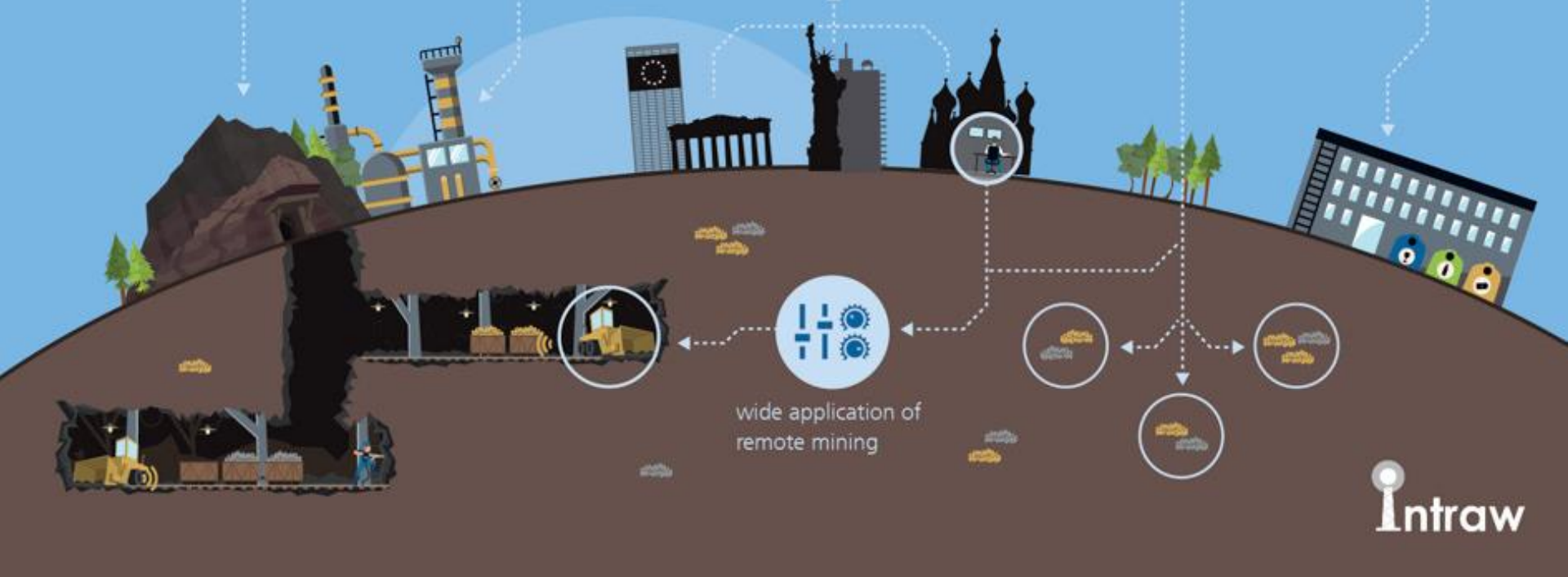
international cooperation and elimination of trade barriers



increased use of high tech for exploration and extraction



recycling gains importance



wide application of remote mining





# Future scenarios for the world of raw materials 2050

Scenario 3:

## NATIONAL WALLS

Economic standstill gives rise to nationalist politicians and protectionist measures.



<http://fs.fhg.de/INTRAW2>



2050



countries that abandoned mining have re-started



mining technology development is at a standstill, but some countries have to catch up



little economic growth, mostly boosted by national government



no collaboration across national borders



acceptance of mining (it is a necessity)



mining practices are basically the same as 40 years ago

less mining employees than 30 years ago





# Thank you

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