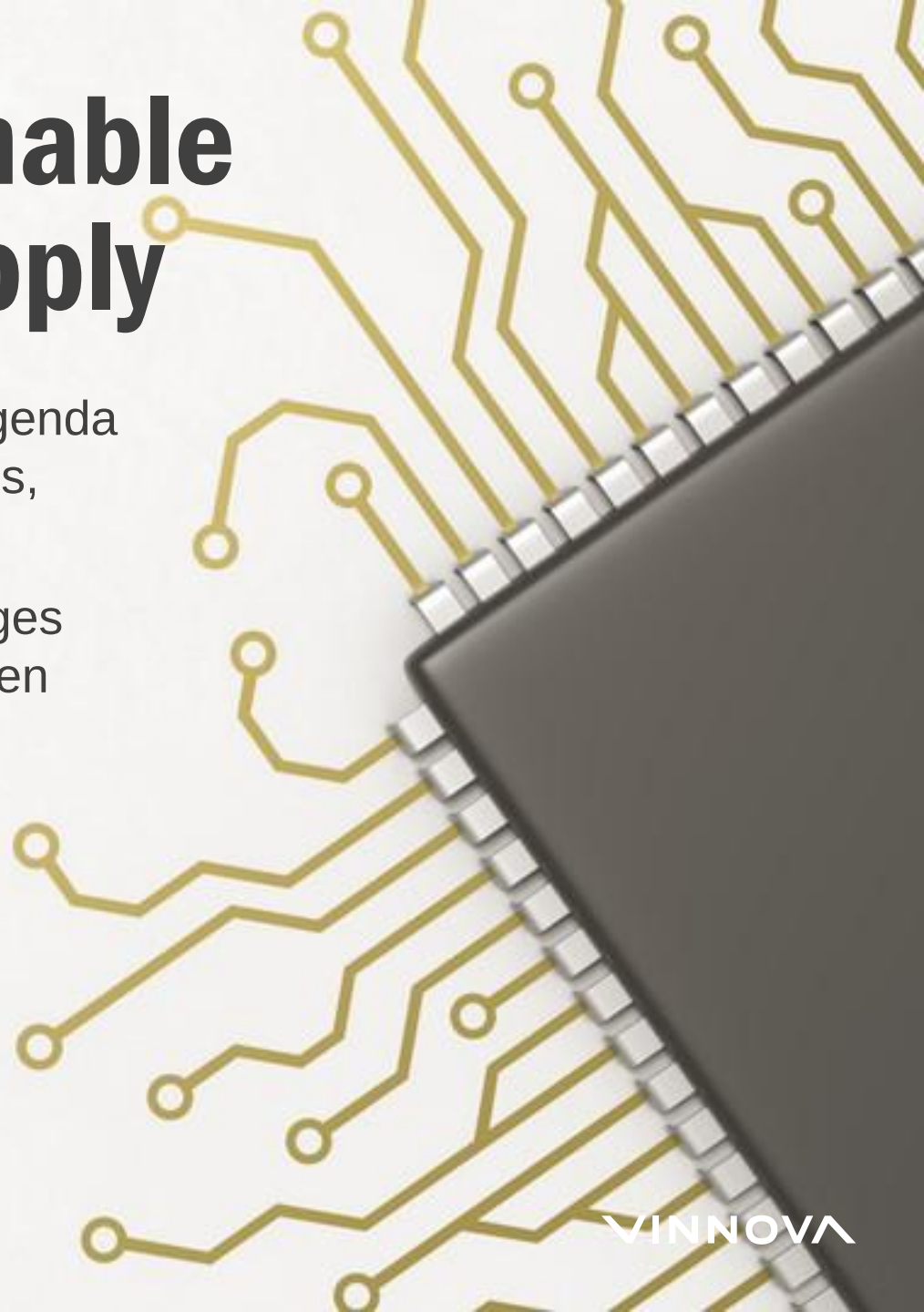
A strategy on raw materials research and innovation beyond 2030

SCOPE, METHODOLOGY & THEMATIC OUTLINE

A mission towards sustainable raw materials use and supply

The aims for the new Strategic Research and Innovation Agenda (SRIA) within the field of non-energy, non-food raw materials, are two-fold:

- **Identifying** critical technological and structural challenges within the EU relating to raw material supply for the green and digital transition
- **Addressing needs** for research and innovation to tackle the challenges, as well as **prioritizing** among strategically important core targets



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Complementarity with Horizon Europe and EIT RawMaterials

New partnership on raw materials

- Small consortia (4 to 11 partners)
- Usually 3 to 5 countries
- €0.5 to €1.5 Mio requested funding
- Focus on needs-driven (basic and applied) research at TRL 1-6
- 24-36 months project duration
- Involvement of EU regions
- Involvement of strategic third countries

Horizon Europe

- Large consortia (12 partners and above)
- Usually 6 countries or more
- €6M and above of requested funding
- TRL 3-7 (RIAs and IAs)
- 36-60 months project duration

EIT RawMaterials

- Varying consortium size, all must pay membership fee to EIT RM
- Minimum start TRL5, minimum target TRL 7
- Minimum co-funding 30%
- Focus on commercialization and financial backflow to EIT RM

TOP-DOWN INFLUENCERS

The European Innovation Partnership (EIP) on raw materials
Strategic Implementation Plan (SIP)
Horizon Europe

EIT RawMaterials
Critical Raw Materials Act
ETP-SMR
Other co-funded partnerships

EUROPEAN PARTNERSHIP ON RAW MATERIALS

Strategic Research & Innovation Agenda → Implementation Plan → **Actions** → Projects, Results, Effects, Impacts

Research community, industry, stakeholders

Partners within the programme

Actors within the system

EUROPEAN PARTNERSHIP ON RAW MATERIALS

Strategic Research & Innovation Agenda | **Implementation Plan**

Core and transversal

R&I themes

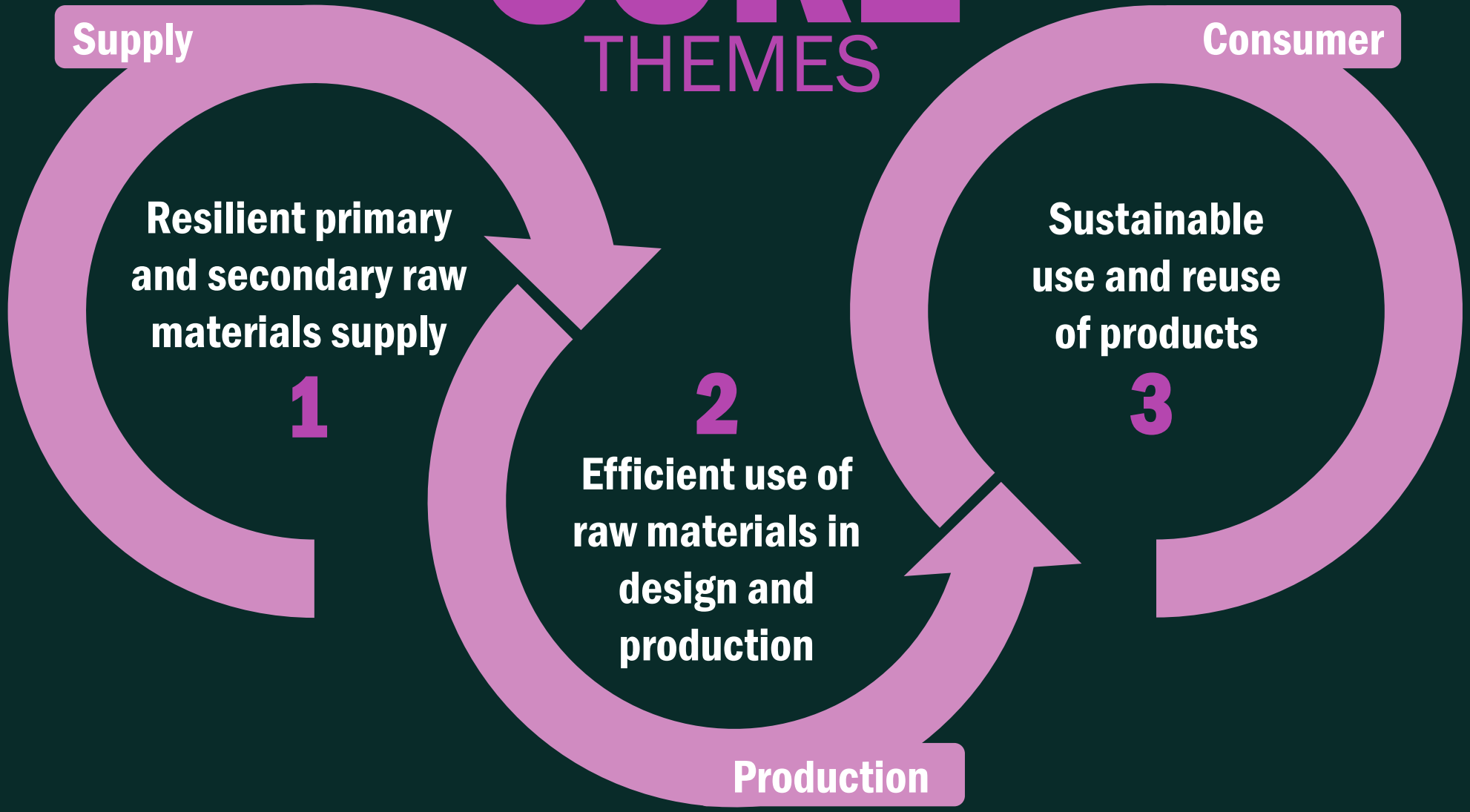
Call for projects
(call topics)

Workshops & events

Strategic actions

Roadmaps & dialogues

CORE THEMES


Supply
Resilient primary and secondary raw materials supply
1
2
Efficient use of raw materials in design and production
Production
Consumer
Sustainable use and reuse of products
3

TRANSVERSAL THEMES

1. Effective policy development and governance

2. Maximizing societal benefits

3. World-class innovation capacity

CORE THEMES

Core targets

Technical innovation

Close to business

Focus within economic activity

TRANSVERSAL THEMES

Enabling targets

Social innovation

Human centric

Focus on social and ecological sustainability

CORE THEME 1:
Resilient primary and secondary raw materials supply

Raw materials are needed to produce virtually everything we use in society. As economies and populations grow, and with an increasing need for a twin transition to new green and digital technology, our demand for raw materials sky-rockets. Building resilient value chains begins with developing supply for raw materials from both primary (mining) and secondary (recycling) sources. CT1 includes, but is not limited to:

- Technological advances in exploration, mining, processing, metallurgy, re-mining, urban mining and recycling, in order to secure a resilient raw materials supply
- Securing environmentally sustainable raw material operations
- System innovation within scientifically identified planetary boundaries

Singular example of actions or projects within the theme:
Call for projects on automation and AI technology within blasting and loading in the mining industry

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CORE THEME 2:
Efficient use of raw materials in design and production

Raw materials such as copper, rare earth elements and cobalt are finite resources. As demand grows, it will become increasingly more difficult to supply certain raw materials to the market, thereby increasing their criticality. For this reason, it is crucial to conduct research and innovation on minimizing the use of raw materials in the production industry, especially related to raw material intensive industries, for example in batteries, automotive and energy industries. CT2 includes, but is not limited to:

- Production processes with minimized raw material usage and minimized losses
- Product design to minimize raw material need, especially regarding critical raw materials
- Product design to enable reuse, repair and recycling
- Substitution of critical raw materials in products

Singular example of actions or projects within the theme:
Evaluation criteria or KPI on successful substitution of critical raw materials in a production line

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CORE THEME 3:
Sustainable use and reuse of products

The most effective way to reduce the increasing need for raw materials, and the impact on the climate and our environment, is to keep products as high up in the circular economy as possible. But changing the way we use, reuse and repair our products requires innovation, for example within new business models and consumption patterns. CT3 includes, but is not limited to:

- Technologies for more long-term use by reuse, repair, refurbishing, repurposing and remanufacturing
- Method development within collection, sorting and pre-processing
- New business models that enable the circular economy
- Research and action on behavioral changes in society connected to consumption patterns

Singular example of actions or projects within the theme:
Demonstration project on metal recycling, with work packages on exploring new business models

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TRANSVERSAL THEME 1:
Effective policy development and governance

To truly support more sustainable use and supply of raw materials within the EU, effective policy and governance must be developed. Many pieces of the puzzle have been provided or proposed, for example the Critical Raw Materials Act, but complementary actions that aim to support the increasing needs are vital. Data collection to support sustainable development will be especially important. TT1 includes, but is not limited to:

- Development of interdisciplinary scenarios, life cycle analysis and other necessary data to support policy development
- Policy labs to work with issues in an experimental way
- Innovation in guidance and structure within governance for the public and private sectors
- Policy and governance to promote investments within raw materials industries

Singular example of actions or projects within the theme:
Policy lab workshops during a programme conference on effective permitting processes

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TRANSVERSAL THEME 2:
Maximizing societal benefits

While we rush to meet all the challenges that the climate crisis and value chain disruptions present, we must take care not to create new challenges to our sustainable development. While industries might need to be expanded or developed in new areas, it is important not to forget the local communities. By focusing research and innovation on maximizing societal benefits, we can ensure that we leave the world a better place for coming generations. TT2 includes, but is not limited to:

- Strengthening societies through social innovation
- Minimizing adverse environmental effects
- Innovation in workplace safety, health and gender issues
- Advancing practical implementation of human rights
- Building trust and acceptance of new industries, policies and norms

Singular example of actions or projects within the theme:
Promotion of public sector and NGOs in specific calls for projects to encourage system approach

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TRANSVERSAL THEME 3:
World-class innovation capacity

To build a foundation of world-class research and innovation, the EU needs a large supply of skilled personnel. To extract critical raw materials lacking in the EU, future industries will need skills that are not available within the EU today. There is also a need to focus efforts and align strategies among the EU partners, in close collaboration with third countries, to maximize the joint innovation capacity. TT3 includes, but is not limited to:

- Building expert networks, win-win partnerships and arenas for innovation and research
- Actions to attract and sustain future skills, for example by implementing university programmes and PhD-networks, and engaging young people to influence future career paths
- Effective collaboration with third countries
- Identifying, developing and maintaining optimal utilization of the EU research infrastructure

Singular example of actions or projects within the theme:
Active collaboration on exchanges with international partners to encourage skills transfer

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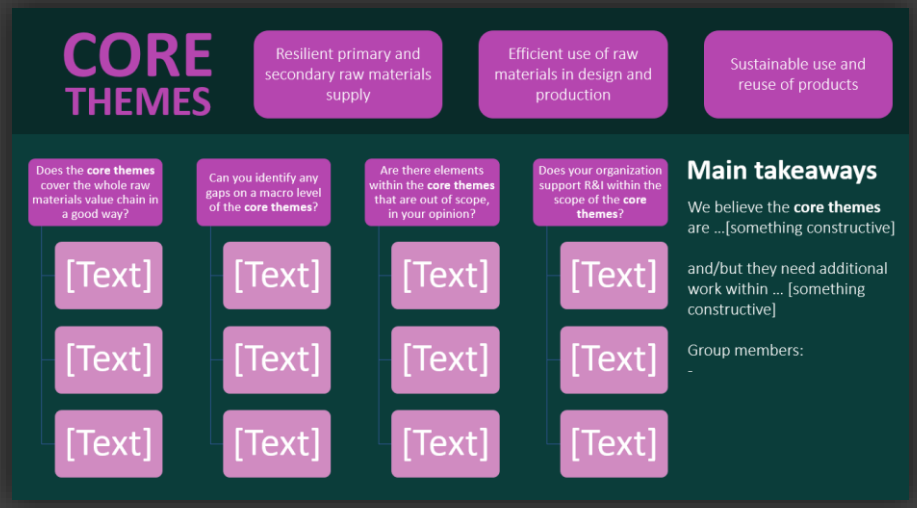
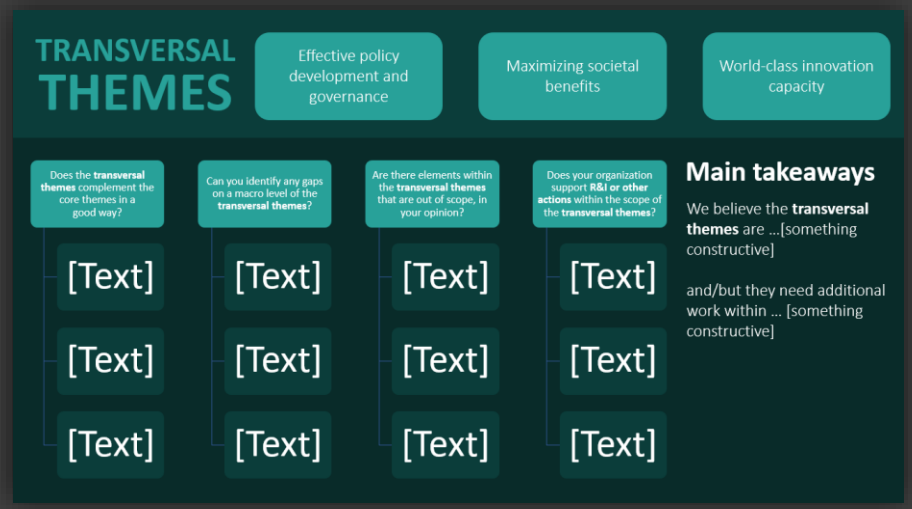
Workshop

- Breakout session – core themes
  - Moderator will guide the discussion
  - Main takeaways from each discussion in plenary
- Breakout session – transversal themes
  - Moderator will guide the discussion
  - Main takeaways from each discussion in plenary
- Wrap-up





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Building the agenda – prel. timeline

Agenda outline and workplan (May 2023)

Recruitment of editors and workgroups for each theme (June 2023)

Input from ERA-MIN partners and other countries/regions (workshop, June 2023)

Input from ERA-MIN projects and other stakeholders (open workshop, August 2023)

RawMat2023 conference, Athens

Input from independent ERA-MIN SEB expert panel (workshop, September 2023)

SEB meeting, online

Finalize first draft (November 2023)

Feedback from stakeholders (open workshop, November 2023)

RM week, Brussels

Finalize second draft (December 2023)

Feedback from ERA-MIN partners and other countries/regions (workshop, January 2024)

Final edits and proof-reading with selected experts (February 2024)

Publication of final version (March 2024)

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