ERA-MIN RTDI projects to foster circular economy

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ERA MIN 2. Introduction

ERA-MIN 2 (1st December 2016 – 30th November 2021) – 5 years

- Title: Implement a European-wide coordination of research & innovation programs on raw materials to strengthen the industry competitiveness and the shift to a circular economy

- Horizon 2020 ERA-NET Cofund project under Societal Challenge 5 - Climate Action, Environment, Resource Efficiency and Raw Materials

- ERA-NET Cofund instrument is a public-public partnership (P2P):
  - Eligible participants are research funding organisations (national Ministries, regional authorities, national and regional funding agencies).
  - The European Commission co-funds a single joint call for transnational proposals (ERA-MIN Joint Call 2017). In addition, two joint calls without EU co-funding will be implemented.

Participation of legal entities from international countries and/or regions is encouraged in the 2018 and 2019 Joint Calls.
ERA-MIN 2. Consortium
Pan-European, innovative and flexible network of 21 public research and innovation funding organisations of 13 EU countries/regions and 4 non-EU countries

EU co-funded Call

- EU co-funding: ca. 5 M€
- Total call budget ca. 15 M€

- Launch: 1st February 2017
- Funding decision: Jan. 2018
- Projects start: 1st May 2018

- Centralised peer-review based on the H2020 evaluation criteria:
  1) Excellence, 2) Impact and 3) Implementation.

- Selection of projects following a ranking list recommended by the Scientific Evaluation Board.
Future objectives/activities

**2018 and 2019 Joint Calls** for transnational proposals by pooling only national/regional funds, without EU co-funding

OPEN to participation of funding organisations from other countries and regions that are not partners of ERA-MIN 2

As a result of 3 joint calls for transnational R&I proposals, ERA-MIN 2 aims to provide support to a total of 30 transnational R&I projects with 30 million Euros.

2017-2021 – Follow-up of funded projects (including ERA-MIN projects); Organise mid-term and final Workshops; Mapping of research funding programmes for mutual learning; Organise/participate in joint workshops, matchmaking events with other Ministries and funding agencies

By 2021, ERA-MIN 2 aims to have 24 Associated partners/Observer organisations: 18 from European countries; 6 from non-European countries.

ERA-MIN Joint Call 2017 at a glance

**SCOPE**: demand-driven research and innovation on primary and secondary resources of metallic, construction and industrial minerals and substitution of Critical Raw Materials in a circular economy approach.
ERA-MIN Joint Call 2017 – thematic areas

Five main topics:

1. Supply of raw materials from exploration and mining
2. Design
3. Processing, Production and Remanufacturing
4. Recycling of End-of-Life Products
5. Cross-cutting topics:
   5.1. New business models
   5.2. Improvement of methods or data for environmental impact assessment
   5.3. Social acceptance and trust/public perception of raw materials

ERA-MIN Joint Call 2017 – main topics and sub-topics

1. Supply of raw materials from exploration and mining
   1.1. Exploration
   1.2. Mining operations
   1.3. Mine closure & reclamation

2. Design
   2.1. Product design for increased raw material efficiency
   2.2. Product design for reuse or extended durability of product
   2.3. Product design to promote recycling
   2.4. Product design for critical material substitution
### ERA-MIN Joint Call 2017 – main topics and sub-topics

<table>
<thead>
<tr>
<th>3. Processing, Production and Remanufacturing</th>
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</thead>
<tbody>
<tr>
<td>3.1. Increase resource efficiency in resource intensive production processes</td>
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<tr>
<td>3.2. Increase resource efficiency through recycling of residues or manufacturing</td>
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<tr>
<td>3.3. Increase resource efficiency using information &amp; communication technologies (ICT)</td>
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<tr>
<th>4. Recycling of End-of-life products</th>
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<tr>
<td>4.1. End-of-life products collection and logistic</td>
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<tr>
<td>4.2. End-of-life products pre-processing</td>
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<td>4.3. Recovery of raw materials from End-of-life products</td>
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<td>4.4. Increase recycling of End-of-Life products information &amp; communications technologies (ICT)</td>
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### ERA-MIN Joint Call 2017

Joint application & evaluation but **national/regional funding**

- **National/regional funding priorities, rules and regulations** apply:
  - **Call topics (and sub-topics)** eligible for funding
  - **Eligible organisations** from academia, industry, SMEs, NGOs, public authorities from the participating countries/regions
  - **Eligible type of research**: fundamental and applied research (Technology Readiness Level TRL 1-9)
Partner search tool

Searching for partners and build consortia? Please refer to the online tool available on the NCPs-CaRE website (http://partnersearch.ncps-care.eu/).

More details on the ERA-MIN Joint Call 2017 Webinar on 30th March at 12:00 CEST available at ERA-MIN 2 website

ERA-MIN Joint Call 2017
Call statistics
ERA-MIN Joint Call 2017 – proposals submission

94 Pre-proposals involving 493 applicants (27% enterprises)
35 Full-proposals involving 186 applicants (33% enterprises)

ERA-MIN Joint Call 2017 – proposals submission by country

4 countries not participating in the Call
ERA-MIN Joint Call 2017 – proposals submission by call topic

ERA-MIN Joint Call 2017
Main call topics addressed in each country (pre-proposals)

# Pre-proposals

Argentina
Belgium/Flanders
Brazil
Chile
Finland
France
Germany
Hungary
Ireland
Italy
Norway
Poland
Portugal
Romania
Slovenia
South Africa
Spain
Sweden
Switzerland
Turkey
United Emirates

0 5 10 15 20 25 30 35 40

# Pre-proposals

Topic 1
Topic 2
Topic 3
Topic 4
Topic 5

12/04/2018
ERA-MIN Joint Call 2017 – funded projects (Success rate – 17%)

16 transnational funded projects by 16 countries/regions
12.3 million Euro allocated funding of 16 million Euro total costs
34 enterprises (39%) out of a total of 88 beneficiaries

ERA-MIN Joint Call 2017 – Participations as coordinator and as partner in funded projects

Country not participating in the Call
Partnerships established between partners of the 16 funded projects

18 public research and innovation funding organisations of 11 EU countries, 1 EU region, 1 EU Associated Country and 3 non-EU countries

ERA-MIN Joint Call 2017
Call sub-topics addressed by the 16 funded projects

1. Exploration/ mining
   1.1 Exploration
   1.2 Mining operations
   1.3 Mine closure and reclamation

2. Design
   2.1 Product design for increased raw material efficiency
   2.2 Product design for reuse or extended durability of products
   2.3 Product design to promote recycling
   2.4 Product design for critical materials substitution
   2.5 Increase resource efficiency in resource intensive production processes
   2.6 Increase resource efficiency through recycling of residues/remanufacturing
   2.7 Increase resource efficiency using ICT

3. Production/ Remanufacturing
   3.1 Increase resource efficiency in resource intensive production processes
   3.2 Increase resource efficiency through recycling of residues/remanufacturing
   3.3 Increase resource efficiency using ICT

4. Recycling of End-of-life products
   4.1 End-of-life products collection and logistics
   4.2 End-of-life products pre-processing
   4.3 Recovery of raw materials from End-of-life products
   4.4 Increase recycling of End-of-life products through ICT
   4.5 New business models
   4.6 Improvement of methods or data for environmental impact assessment

5. Cross-cutting topics
   5.1 New business models
   5.2 Improvement of methods or data for environmental impact assessment
   5.3 Social acceptance and trust/public perception of raw materials
ERA-MIN Joint Call 2017 – Type of applicants in funded projects

ERA-MIN Joint Call 2017 – 4 funded projects address Topic 1. Supply of raw materials from exploration and mining

<table>
<thead>
<tr>
<th>Call sub-topics</th>
<th>Project Keywords</th>
<th>Countries /regions</th>
<th>Project acronym/title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1: Exploration</td>
<td>Li-deposit exploration, drone, SWIR, LIBS, integrated software solutions</td>
<td>France, Portugal, Germany</td>
<td>LIGHTS Lightweight Integrated Ground and Airborne Hyperspectral Topological Solution</td>
</tr>
<tr>
<td>1.1: Exploration</td>
<td>Exploration, magnetics, airborne, FTMG/3D-VM/OPM, high resolution</td>
<td>Germany, Sweden, Spain</td>
<td>AMTEG Advanced Magnetic full TENSOR Gradiometer instrument</td>
</tr>
<tr>
<td>1.2: Mining operations</td>
<td>Sensor fusion, LIBS, multi energy X-ray, mining, geological modelling</td>
<td>Germany, Chile, Sweden</td>
<td>REWO-SORT Reduction of Energy and Water consumption of mining Operations by fusion of sorting technologies LIBS and ME-XRT</td>
</tr>
<tr>
<td>1.1: Exploration</td>
<td>Innovative, gold, targeting, 3D modelling, microanalysis</td>
<td>Ireland, Sweden</td>
<td>Gold_Insight Tracing Gold-Copper-Zinc with advanced microanalysis</td>
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</tbody>
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### ERA-MIN Joint Call 2017 – 1 funded projects address Topic 2. Design

<table>
<thead>
<tr>
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<th>Project identifier</th>
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<th>Project acronym/title</th>
</tr>
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<tbody>
<tr>
<td>2.1: Product design for increased raw material efficiency</td>
<td>Monazite, rare earth oxides, doped zirconia, thermal barrier coatings, sintered zirconia</td>
<td>Romania, Italy, France</td>
<td>MONAMIX New concepts for efficient extraction of mixed rare earths oxides from monazite concentrates and their potential use as dopant in high temperature coatings and sintered materials</td>
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<tr>
<td>2.4: Product design for critical materials substitution</td>
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### ERA-MIN Joint Call 2017 – 7 funded projects address Topic 3.

<table>
<thead>
<tr>
<th>Call sub-topics</th>
<th>Project identifier</th>
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<th>Project acronym/title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4: Product design for critical materials substitution; 3.2: Increase resource efficiency through recycling of residues or remanufacturing</td>
<td>Phosphorus recycling, P from manure ash, P-concentration, P-sustainability, Zero waste</td>
<td>Portugal, Brazil, Italy, Poland, Romania, Sweden, Turkey, France</td>
<td>Deasphor Design of a product for SUBSTITUTION of phosphate rocks</td>
</tr>
<tr>
<td>3.1: Increase resource efficiency in resource intensive production processes</td>
<td>Lithium, membrane electrolysis, water recovery, life cycle analysis, magnesium</td>
<td>Argentina, Belgium/ Flanders, Sweden</td>
<td>Li-Water Membrane electrolysis for resource-efficient lithium and water recovery from brines</td>
</tr>
<tr>
<td>3.2: Increase resource efficiency through recycling of residues or remanufacturing</td>
<td>Waste recycling, slag, fibers, alkali activated foams</td>
<td>Slovenia, Finland, Italy</td>
<td>FLOW Lightweight alkali activated composite foams based on secondary raw materials</td>
</tr>
<tr>
<td>3.1: Increase resource efficiency in resource intensive production processes; 3.2: Increase resource efficiency through recycling of residues or remanufacturing</td>
<td>Mining wastes, mineral processing, hydrometallurgy, base and precious metals, economic and environmental assessment</td>
<td>France, Romania, Turkey, Poland</td>
<td>MINTECO Integrated eco-technology for a selective recovery of base and precious metals in Cu and Pb mining by-products</td>
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</table>
### ERA-MIN Joint Call 2017 – 7 funded projects address Topic 3. Processing, Production and Remanufacturing

<table>
<thead>
<tr>
<th>Call sub-topics</th>
<th>Project keywords</th>
<th>Countries/regions</th>
<th>Project acronym/title</th>
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<tbody>
<tr>
<td><strong>2.1:</strong> Product design for increased raw material efficiency, <strong>2.2:</strong> Product design for reuse or extended durability of products, <strong>2.3:</strong> Product design to promote recycling, <strong>3.2:</strong> Increase resource efficiency through recycling of residues or remanufacturing. <strong>3.3:</strong> Increase resource efficiency using information and communication technologies (ICT) <strong>4.1:</strong> End-of-life products collection and logistics, <strong>4.2:</strong> End-of-life products pre-processing: pre-treatment, dismantling, sorting, characterisation, <strong>4.3:</strong> Recovery of raw materials from End-of-life products, <strong>4.4:</strong> Increase recycling of End-of-Life products through information and communication technologies (ICT), <strong>5.1:</strong> New business models, <strong>5.2:</strong> Improvement of methods or data for environmental impact assessment.</td>
<td>Circular economy, magnet recycling, NdFeB magnets, end-of-life magnets, Eco-labelling</td>
<td>Slovenia, Germany, Sweden</td>
<td>MaXcycle: A novel circular economy for sustainable RE-based magnets</td>
</tr>
<tr>
<td><strong>3.1:</strong> Increase resource efficiency in resource intensive production processes, <strong>3.2:</strong> Increase resource efficiency through recycling of residues or remanufacturing, <strong>5.2:</strong> Improvement of methods or data for environmental impact assessment.</td>
<td>Bottom Ash, Metal Recovery, Construction Minerals, Recycling, Waste Minimization</td>
<td>Germany, Italy, Sweden</td>
<td>BASH-TREAT: Optimization of bottom ash treatment for an improved recovery of valuable fractions</td>
</tr>
<tr>
<td><strong>3.2:</strong> Increase resource efficiency through recycling of residues or remanufacturing, <strong>4.3:</strong> Recovery of raw materials from End-of-life products</td>
<td>Rare earth elements, recycling, magnetic nanomaterials, e-waste, selectivity</td>
<td>Slovenia, Sweden, Argentina, France</td>
<td>MetRecycle: Recycling of metals using functionalized magnetic nanoparticles (FMNP)</td>
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</table>
### ERA-MIN Joint Call 2017 – 4 funded projects address Topic 4. Recycling of End-of-Life products

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<tbody>
<tr>
<td>4.3: Recovery of raw materials from End-of-life products</td>
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<tr>
<td>4.3: Recovery of raw materials from End-of-life products, 5.1: New business models</td>
<td>PCB, ASR, battery critical metals, economic assessment full scale plant</td>
<td>Ireland, Belgium /Flanders, Germany, Spain</td>
<td>ReCEOL Recycling of End-of-Life Products (PCB, ASR, LCD)</td>
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More information on the 16 ERA-MIN 2 funded projects and the 17 ERA-MIN funded projects are available at https://www.era-min.eu/results

ERA-MIN Research Agenda is available for download at: https://www.era-min.eu/publications

ERA-MIN Joint Call 2018
Participating countries
Call calendar
ERA-MIN 2 is a global, innovative and flexible network
• for the coordination of R&I Funding Programmes in non-energy non-agricultural raw materials
• to secure the sustainable and responsible industrial supply of mineral raw materials across Europe and globally

- Funds demand driven research transnational projects
- Supports partnerships between academia, industry and SMEs
- Provides access to leading knowledge and new markets across Europe and world-wide
### ERA-MIN Joint Call 2018

#### Scope / Call thematic areas
- **Similar to Call 2017**

15 Participating countries/regions *(to be updated in September 2018)*
- **Latin American Countries:** Argentina, Brazil and Chile
- **EU countries/regions:** Belgium-Flanders; Finland; France; Ireland; Poland; Portugal; Romania; Slovenia; Spain - Castilla y Léon; Sweden;
- **Non-EU countries:** South Africa; Turkey;

#### Call provisional budget *(to be updated later)*
- 7.2 million Euros

### ERA-MIN Joint Call 2018

#### Submission procedure
- One-stage submission procedure *(only full proposals)*

#### Call pre-announcement
- September 2018

#### Call opens
- 31st October 2018

#### Full-proposal submission deadline
- 31st January 2019

#### Feedback to applicants
- Mid May 2019

#### Earliest start date of projects
- June 2019
HOW CAN YOU GET INVOLVED?

If you are a researcher from academia, SME, industry, NGO or public authority

- Apply, as coordinator or partner, in a transnational consortium to 2018 and 2019 ERA-MIN Joint Calls
- Apply as reviewer for the scientific peer-review of international R&D projects

If you are a Research Funding Organisation (Ministry or Agency) from European or non-European country or region

- Join the 2018/2019 joint calls for transnational R&D projects to support the internationalization of the researchers from your country or region

If you represent a raw materials initiative, Horizon 2020 project, industrial association or an international body

- Liaison with ERA-MIN 2 activities to ensure complementarity and avoid duplication of efforts

Coordination:
FCT - Fundação para a Ciência e a Tecnologia – Portugal (eramin@fct.pt)

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