

## COLLABORATIVE DOCTORAL PARTNERSHIPS – CALL 2020

### THEMATIC FIELD 5: Secure and sustainable supply of raw materials for strategic value chains

#### JRC RESEARCH AREA DESCRIPTION

Secure and sustainable supply of non-fuel and non-agricultural raw materials is a necessary condition to the delivery of several key ambitions of the European Union, including a low carbon and circular economy, digitalisation and technological sovereignty. In recent years, the JRC has supported the European raw materials policy with novel methods, data, indicators, scoreboards, information systems and analysis. Future support to EU policy in the area will require additional ambitious research works.

These doctoral positions will therefore focus on the security of supply and sustainable sourcing of raw materials, both primary and secondary, for the EU. The research topics to be developed in the context of this collaborative doctoral partnership could include (but are not limited to):

- modelling materials flows and stocks in the economy and in specific value chains;
- modelling & building medium and long-term scenarios for security of supply of raw materials
- data analytics for raw materials: supply, demand and prices, as well as drivers, trade creation and trade diversion;
- methods, indicators and data for criticality assessments to be used in policy and/or in business;
- development of assessment tools for sustainable supply of raw materials (including LCA and s-LCA);
- analysis of the potentials of circular economy (re-use and recycling) to reduce supply risks of raw materials;
- development of new recycling technologies to produce key secondary raw materials;
- development of novel indicators to monitor the progresses of the raw materials sector and towards circular economy;
- development of a framework to better link raw materials value chain with Sustainable Development Goals.

The potential benefits of other innovative tools and techniques (e.g. earth observation data for primary extraction, block chain technologies to enhance supply of socially responsible raw materials) could also be investigated.

As far as possible, research works will have to be explored and validated on specific raw materials (with a specific focus on critical raw materials), specific regions (both in member states and in third countries) and specific value chains / sectors (including mobility, energy storage, and digitalisation). All research work will also need to feed into the Raw Materials Information System.

#### MAIN POLICY FIELDS

Through its Raw Materials Project, the JRC is providing science-based support to EU policy in the contexts of the secure and the sustainable supply of raw materials. JRC work explicitly supports the raw material policy, including the establishment of the list of critical raw materials to the EU and the preparation of the Raw Materials Scoreboard (COM/2008/699, COM/2017/0490), the circular economy policy (COM (2015) 614) as well sectorial policies (e.g. COM/2018/293 for sustainable mobility for Europe). JRC also contribute to the establishment of the Raw Materials Knowledge Base through the Raw Materials Information system.

Sustainable and secure supply of raw materials for specific value chains is likely to remain at the heart of climate neutral, technological sovereignty, circular economy and industrial policies of the new European Commission.

#### LINKS / URL WEBSITES

- [https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy\\_en](https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy_en)
- [https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical\\_en](https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en)
- <https://eitrawmaterials.eu/>
- <https://rmis.jrc.ec.europa.eu/>
- <https://rmis.jrc.ec.europa.eu/?page=scoreboard2018#/>

#### LINKS / REFERENCES TO PUBLICATIONS

- <https://doi.org/10.1007/s11367-019-01678-8>
- <https://doi.org/10.1016/j.resconrec.2019.03.045>
- <https://dx.doi.org/10.2760/658948>
- <https://doi.org/10.1016/j.scitotenv.2017.09.117>
- <https://doi.org/10.1111/jiec.12809>
- <https://doi.org/10.1016/j.resconrec.2019.02.022>
- <https://doi.org/10.1016/j.resourpol.2017.05.008>
- <http://dx.doi.org/10.1007/s11367-016-1244-0>
- <http://dx.doi.org/10.1016/j.resconrec.2014.10.014>