

EXPLORATORY ANALYSIS OF THE POTENTIAL EFFECTS OF CRITICALITY ON SOLAR AND WIND ENERGY TECHNOLOGIES IN SPAIN

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BACKGROUND & MOTIVATION

Critical raw materials (CRM) are those raw materials which are economically and strategically important for the world economy, have a high-risk associated with their supply, and there is a lack of viable substitutes and recycling processes. Twenty CRM have been identified as critical in Europe from a list of 54 candidates (Figure 1). Energy systems, like PV solar panels or wind turbines, have particular metals or rare earths in their components that could be included in these CRM (Figure 2).

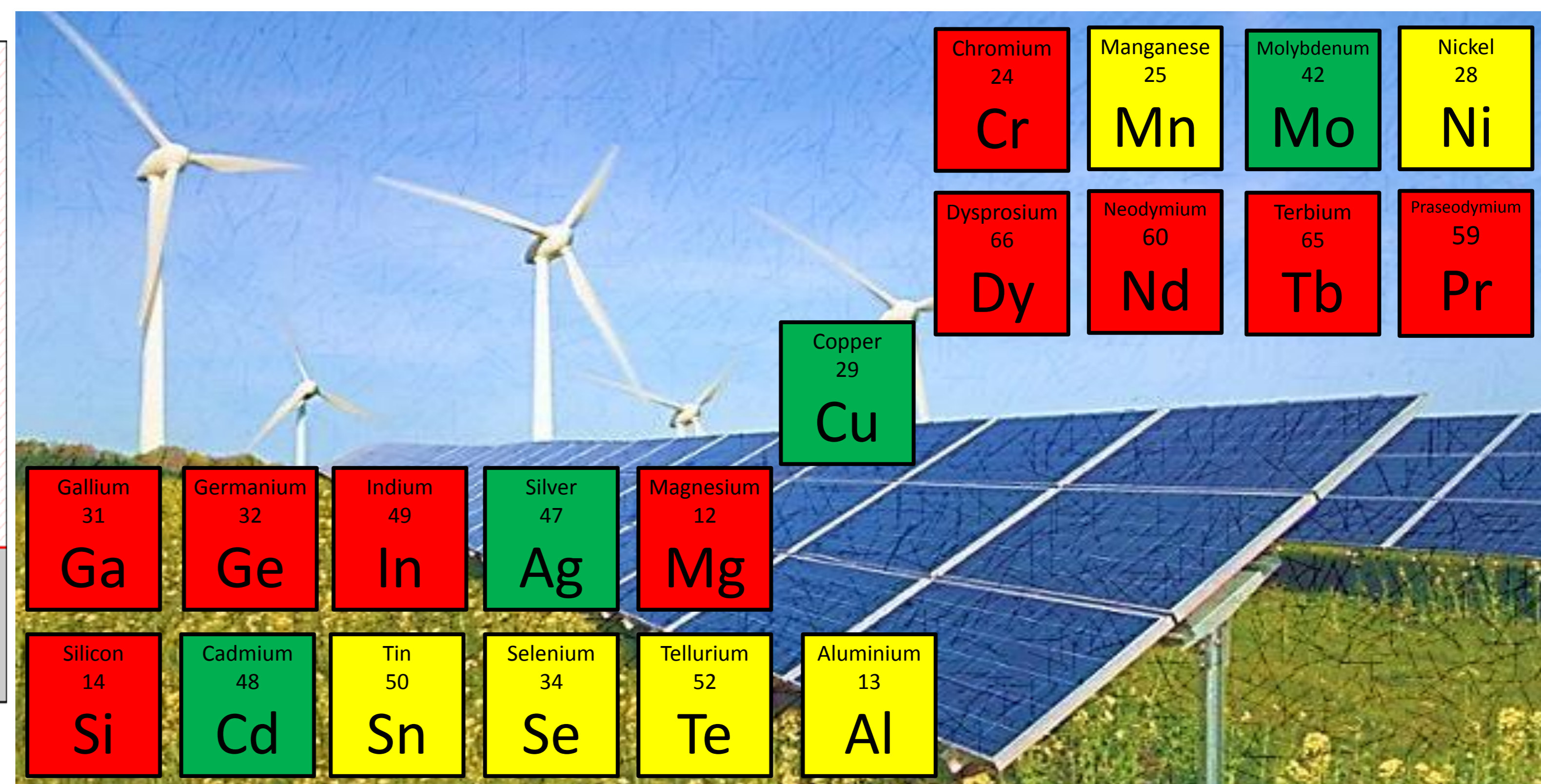
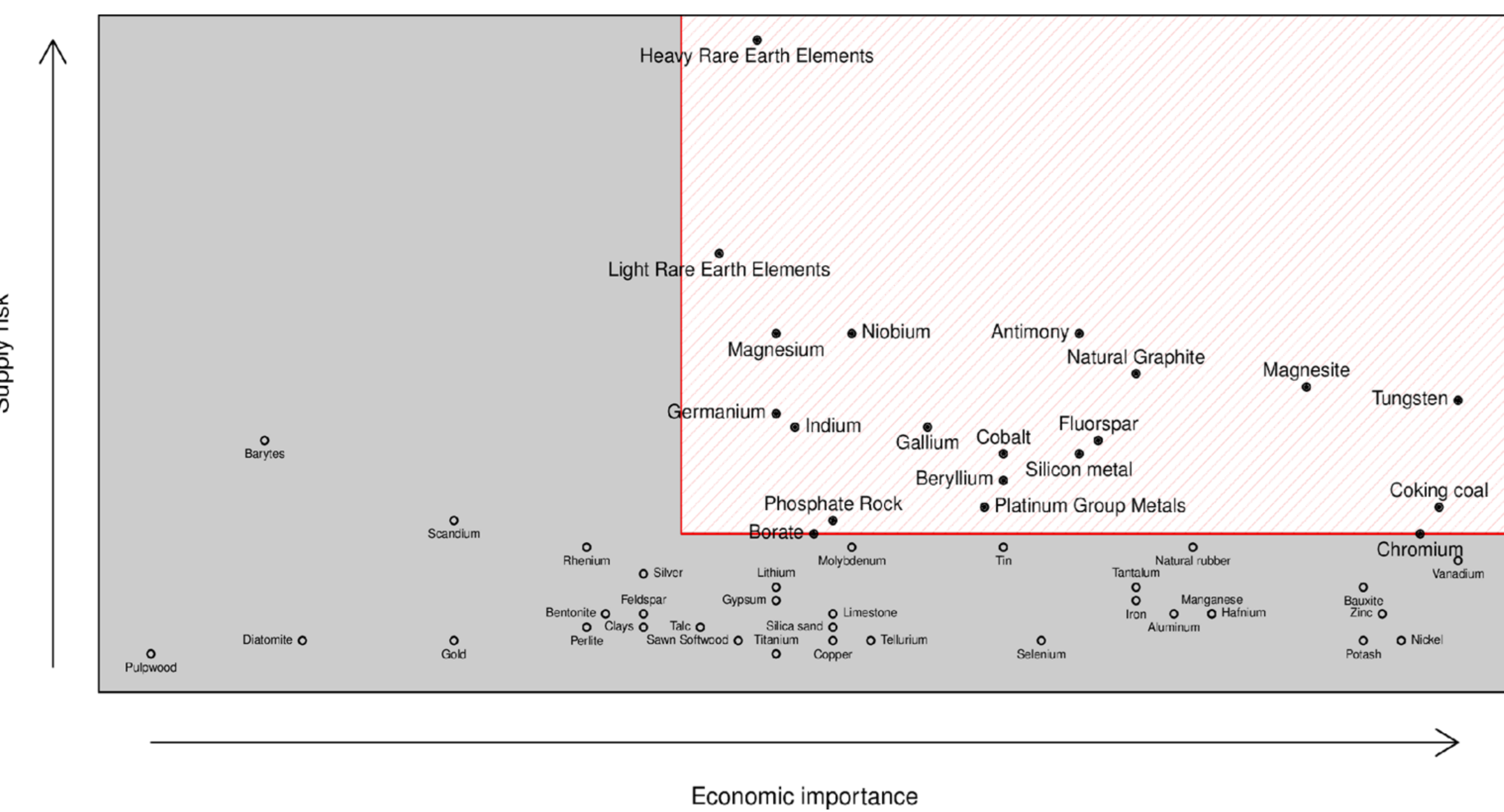


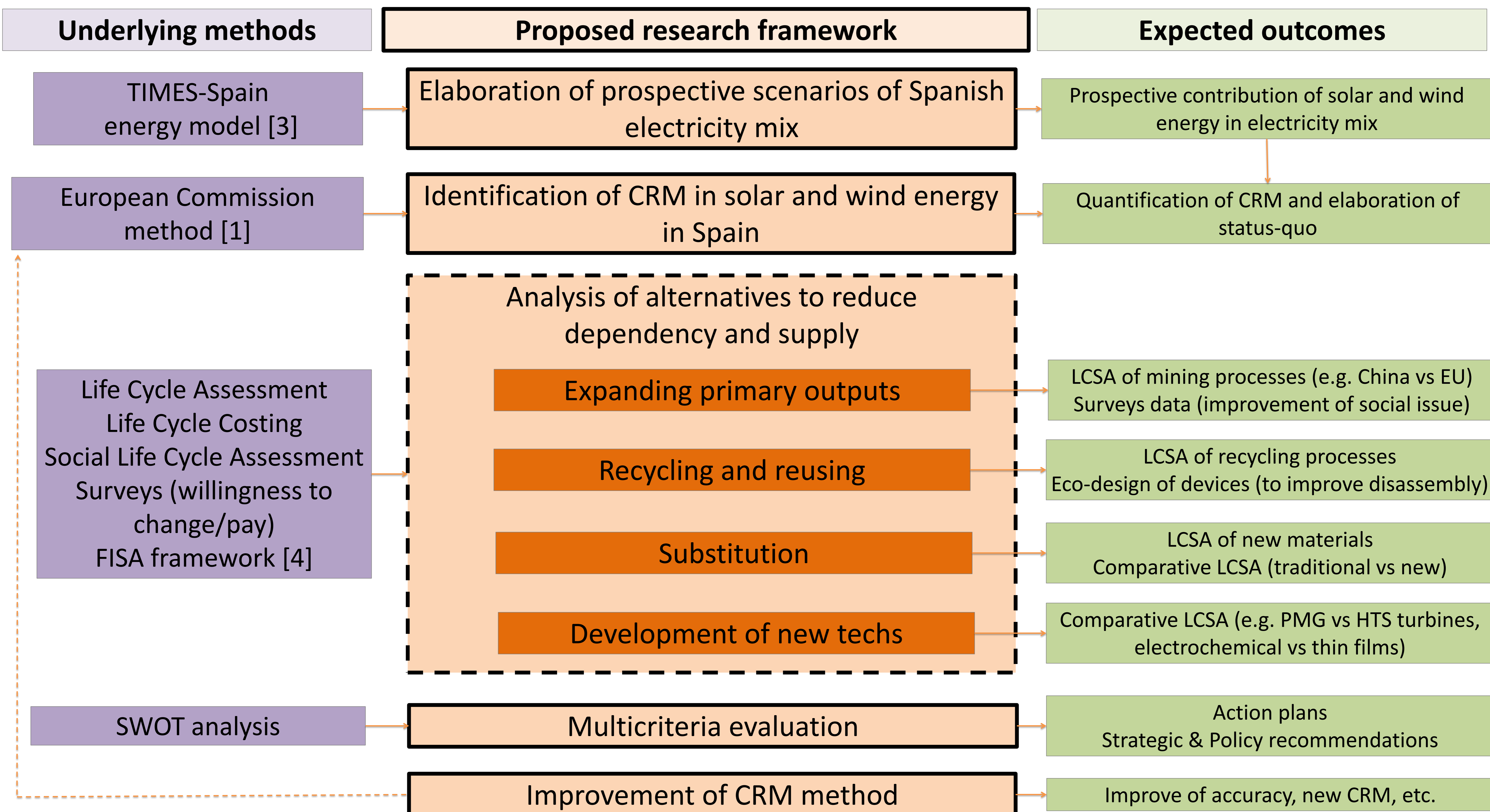
Figure 2. Potential concerned CRM in PV solar (left) and wind (right) energy systems (Red, yellow and green colour entail high, medium and low risk, respectively. Copper is included in both techs) [2] (picture from www.evwind.es).

RESEARCH QUESTIONS

- Which are the potential CRM to be considered in the Spanish Energy System when considering solar and wind technologies?
- What are the most feasible and sustainable measures to reduce the dependency and associated risks of CRM?
- What would be the associated action plan and policy recommendations?

In order to respond to these questions, this work proposes a research framework together with the underlying methods and expected outcomes.

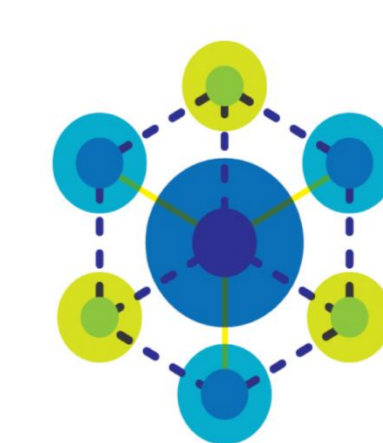
METHODOLOGY



REFERENCES

- [1] European Commission. Report on Critical Raw Materials for the EU, Report of the Ad hoc Working Group on defining critical raw materials, May 2014.
 [2] Moss RL et al. Critical Metals in Strategic Energy Technologies. JRC Report - EUR 24884 EN – 2011.
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 [4] Rodríguez-Serrano I et al. Using the Framework for Integrated Sustainability Assessment (FISA) to expand the Multiregional Input–Output analysis to account for the three pillars of sustainability, *Environ Dev Sustain* (2016). doi:10.1007/s10668-016-9839-y.

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