

CHALLENGES IN THE SUPPLY CHAINS FOR THE GREEN TRANSITION

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As attention to climate change and its effects is increasing, the European Commission has launched the European Green Deal. This ambitious plan will be the basis of the European growth strategy and will see the decarbonisation of European economies and energy systems, with a commitment to reach carbon neutrality by 2050. The realisation of the Green Deal requires a swift transition to clean energy and mobility. However, the availability of several materials key for clean technologies is a possible bottleneck. In particular, several raw materials used in clean technologies have a strategic importance and high supply risks and have thus been flagged as critical [1].

The Joint Research Centre of the European Commission is actively monitoring the current situation and studying future developments. Potential risks are assessed in four steps of the supply chains (i.e., raw and processed materials, components and assemblies) for strategic technologies [2] and specifically for clean technologies (e.g., wind turbines, solar photovoltaics, electric mobility) [3,4]. For most technologies, the raw and the processed materials steps are the most alarming. Geological resource availability, trade barriers, concentration of supplies, lack of mature and stable markets are some of the challenges identified. Moreover, demand is likely to increase significantly for all materials -critical and not- with increased competition for resources amongst different sectors and manufacturers. In the highest demand scenarios, corresponding to a high deployment of clean technologies and low materials efficiencies, projected demand of specific materials may increase between 12 and 40 times from 2018 to 2050. This presentation provides a general overview of our latest findings.

Among other actions, these challenges call for a faster development and market deployment of new products with a focus on increased material efficiency and substitution of critical materials. Advancements in material modelling could be instrumental in making this happen. Moreover, digitalisation could help improving the analysis of supply chain risks. One of the current challenges is access to reliable and updated information, especially in terms of material intensities and lifetimes of products.

REFERENCES

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