

*What does the latest research tell us of the key challenges and approaches to achieve the transformation of energy and other systems to hold global warming to well below 2 degrees and pursue efforts to limit it to 1.5 degrees?*

- Critical to plan for a robust transformation at national-level. The transition needs to particularly address concerns over household-level affordability and price shocks in vulnerable countries, diversity of supply, reduced competitiveness of certain industrial sectors and just transition with necessary policy packages and accompanying measures at different scales.
- Actions on demand-side (efficiency, moderation of demand) can generally enable smooth transitions.
- Early investments to foster learning reduces decarbonisation costs in the long term. These investments are central to benefit from learning and economic opportunities. Delaying action implies a triple burden: doing more later, being less prepared for it and paying more.
- Existing strong sector can fail to develop new technologies (electric vehicles in Italy), but also massive industrial expansions do not automatically yield the latest technology (PV in China). In the end, right policy choices and implementations are crucial to foster learning as well as to the creation of a local industry.
- Long- and short-time horizons are not sufficiently articulated when 2020-2030 rigidities are overestimated or contingent on political stance. Risk of lock-ins and stranded assets becomes higher.
- It is essential for the country-level assessments to be embedded in a global context, to help identify cooperation opportunities and ensuring consistency with the global objective. International cooperation can make an important difference when is tailored to the needs of a specific country, takes into account countries' exposure to different forms of risks and emerging economic opportunities and is able to help absorbing the challenges of the short-term transition and anticipate the risks of long-term lock-ins.
- Global storylines as defined at country-level may facilitate the conceptualisation of cooperative approaches towards low-carbon societies with regards to several enabling aspects, including Access to capital, development of markets, acceleration of innovation or cooperation strategies.