

Seventeenth meeting of the Council  
Abu Dhabi, 25-26 June 2019

## **Background Note**

### **Global Energy Transformation: A Roadmap to 2050**

1. The global energy transformation is more than a simple transformation of the energy sector – it is a transformation of societies and economies. The energy transformation is multi-faceted, and is evolving in terms of technologies, socio-economics, institutional drivers and forms of finance.
2. In 2017, IRENA released its first report focused on long-term decarbonisation and on the technical feasibility and socio-economic benefits of a global energy transition. In 2018, a second report was released, which expanded on the implications of the energy transition and detailed the global level of investment that is needed, while also providing a deeper view on key transition needs by sector and further insights into the socio-economic implications.
3. The 2019 edition updates IRENA’s energy transition analysis of key countries and regions and makes clear that an energy transition is urgently required, and that renewable energy, energy efficiency and electrification are the three cornerstones of that transition. This report presents a deepened perspective on electrification with renewable energy as the key enabling solution of the energy transition driving down energy-related CO<sub>2</sub> emissions in line with Paris climate goals. In addition to discussion on the role of electrification, solutions for decarbonising heating, cooling and transport demand are also presented.
4. This report specifically outlines the need to prepare for an energy system with much higher shares of variable renewable power, for broader innovation, and for strategic planning to increase investments and address potential socio-economic challenges. The key indicators highlighted in this report show that significant acceleration is needed across a range of sectors and technologies, ranging from deeper end-use electrification of transport and heat powered by renewables, to direct renewable use, energy efficiency and infrastructure investment. New insights on energy system costs, subsidies and net benefits with externalities are also presented.
5. The success in implementing any energy transition roadmap is fully dependent on its interactions with the broader socio-economic system where it is embedded. IRENA’s socio-economic footprint analysis aims at measuring these interactions in terms of GDP, jobs and welfare, providing insights into how to improve synergies and address transitions challenges, and support informed policy making. The 2019 edition delves into the socio-economic footprint of IRENA’s REmap case, updating the global and regional outcome of its interaction with the socio-economic system, and providing insight on the effect of drivers such as investment, trade, taxation, and other induced and indirect effects. A discussion of the socio-economic implications of carbon taxation is presented. The need for holistic employment and

just transition policies is highlighted by analysing the implications of the transition on whole-economy and energy sector jobs.

6. This report also addresses the feedback between the energy transition, the socio-economic system and the climate system. Incorporating the effect of climate damage on economic productivity, the report quantifies the macroeconomic impacts of climate change, providing insights on important socio-economic consequences.
7. The 2019 edition of IRENA's Global Energy Transformation roadmap was launched in April 2019 at the Berlin Energy Transition Dialogue.

### ***Objective of the session***

8. The objective of this session is to present to member countries the key findings from IRENA's 2019 energy transition study. The outcome of the session is to better understand the impact of IRENA's decarbonisation study on countries climate goals and policies framework. The session will also gather relevant information and inputs from countries that should be considered in formulating the key topics to be covered in IRENA's energy transition series in forthcoming years.

### ***Guiding questions***

- What are the key findings and how can these global energy scenarios and results be useful for country level climate debate and decision-making process?
- What are the major challenges countries now face to decarbonize the energy sector?
- What are the key topics that countries would like IRENA to address or analyse further in forthcoming energy transition series?

### ***Associated Publications***

- [Global energy transformation: A roadmap to 2050 \(2019 Edition\)](#)
- [Global energy transformation: The REmap transition pathway \(Background report to 2019 edition\)](#)
- [Global energy transformation: Digital story on how to transform the energy system and reduce carbon emissions](#)