International Energy Agency

Overview of IEA work on digitalisation, energy efficiency and smart grids

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IEA work and analysis linked to digitalisation

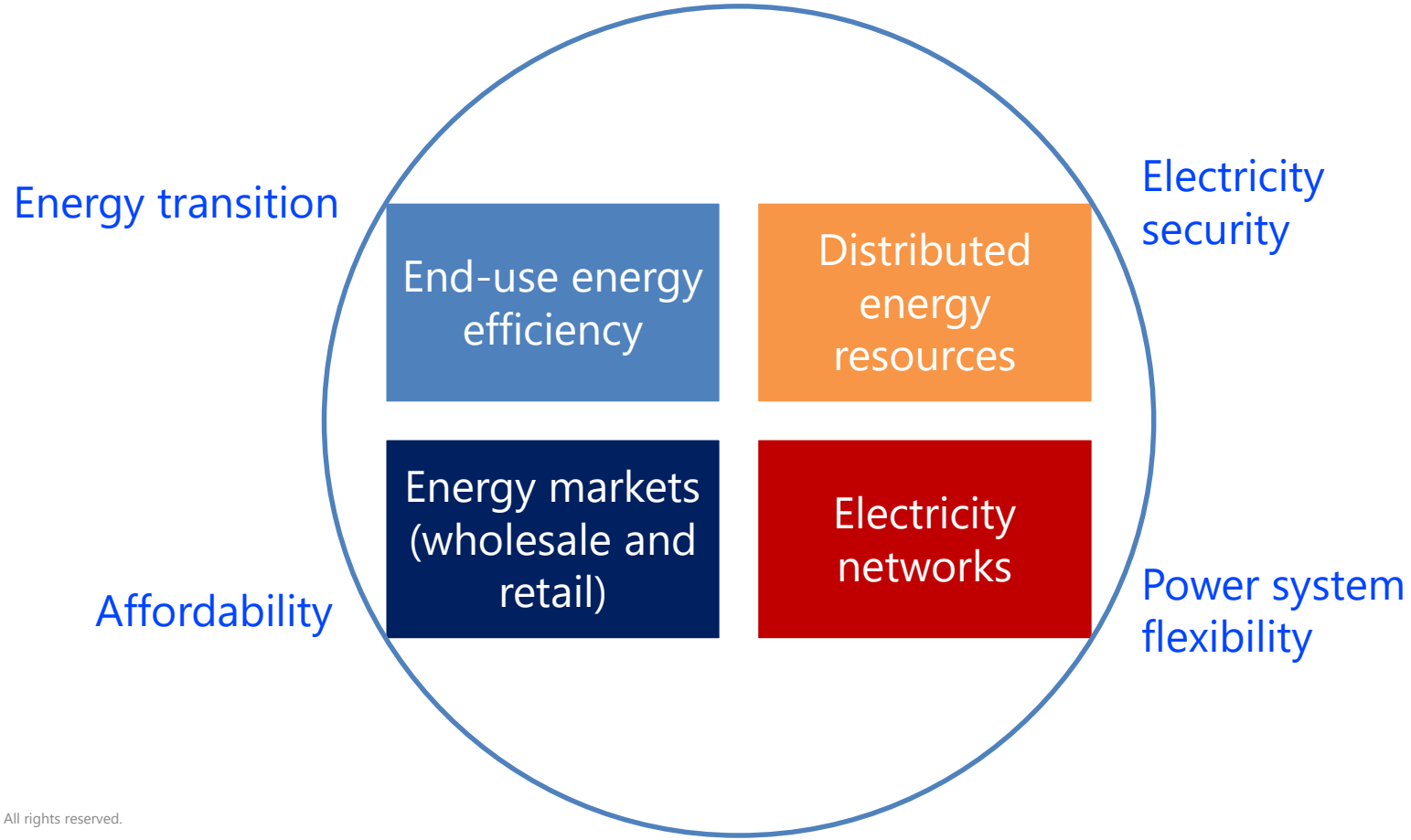
- **Modernising energy efficiency through digitalisation**
- **Demand response and demand side measures**
- **Grid resilience and the role of the power system in clean energy transitions**
- **Systems integration of renewables**
- **Electricity security**
- **Electricity markets**
- **Power system data and indicators including digitalisation/smartness**
- **Tracking smart grids**
- **Tracking technology development and identification of technology opportunities**

Enhanced basis for decision making

Actionable policy guidance

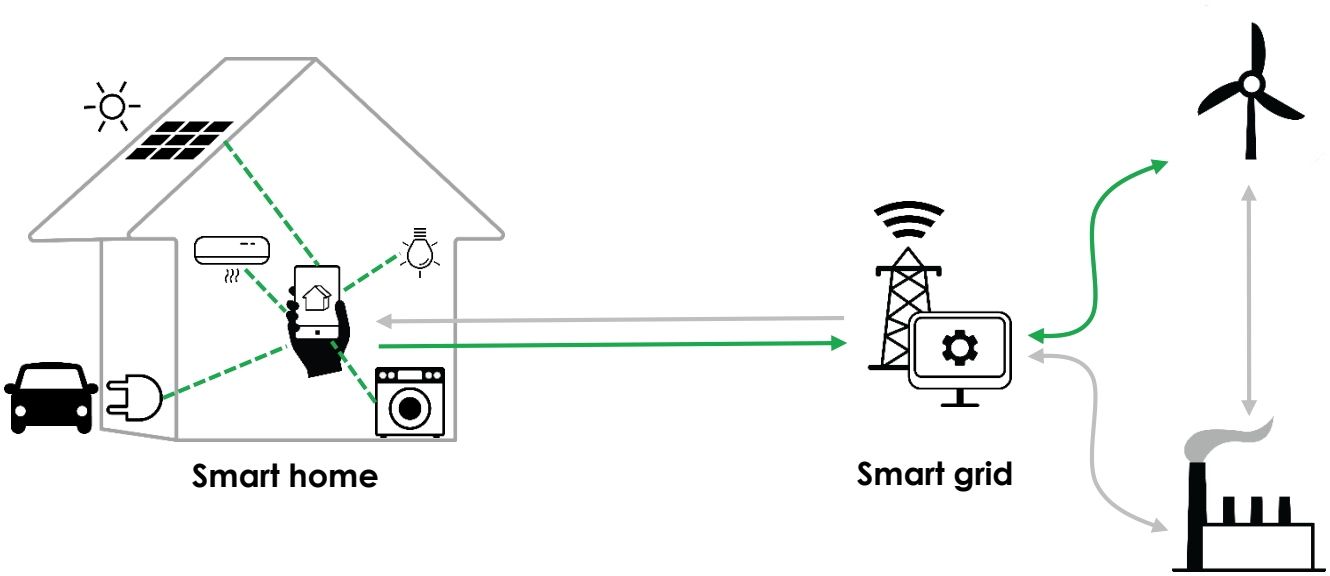
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Key areas of investigation in 2020



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Digitalisation: opportunities across the energy value chain



Traditional efficiency policy addresses devices individually. Digitalisation, with the right policies, enables a progression to optimising the efficiency of the whole energy system.

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WEO2020 Electricity networks focus

Key topics

- Are we taking electricity networks today for granted?
- Electricity networks as key enabler for energy transitions
- What will be the role of smart grids?
- Outlook to 2040: electricity networks as a platform for power system flexibility

Key milestones

- **April/May** One-on-one interviews with contributors
- **31 July** Start of Peer review
- **24 August** Close of Peer review
- **10 November** Publication and launch of World Energy Outlook 2020

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Ensuring electricity security

Electricity security report – forthcoming in 2020

Energy transition

- Operational security
- Adequacy
- Robustness

Digital Resilience

- Cyber threats

Climate impact

- Long-term trends
- Extreme weather

Key Actions:

- Identify risks
- Set responsibilities
- Prepare and monitor
- Respond
- Coordinate

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Evolving electricity markets

- How can existing assets be better utilised?
- What are the new functionalities that digital technologies can provide?
- What are the ancillary services that could be considered?
- How to create virtual power plants?
- What are the pilots and best practice examples that can be scaled up?

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Increasing system flexibility

- Analysis of the impacts of renewable energy integration on power systems
- Development of a system for classification of phases of variable renewable energy integration
- Extensive consultations and engagement to identify best practices and solutions
- Provision of analysis and guidance on how to tackle the challenges of each phase
- How to avoid large-scale curtailment in latter phases
- Identification of the opportunities for digitalisation to support renewables integration and system flexibility in each phase

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