



## Scene setting presentation







Source: IPCC

## Net-zero scenarios for national energy planning

#### Global

Net-zero CO<sub>2</sub> emissions by around 2050 Net-zero GHG emissions by around 2070

#### National

National net-zero strategies: LLTES



Billion tonnes CO<sub>2</sub> per year (GtCO<sub>2</sub>/yr)



# Long-term energy scenarios for clean energy transition network

**Net-zero questions for national scenario making** 

- Direct electrification vs indirect electrification
- Biofuel vs renewable power
- Sector coupling and roles of infrastructure
- Digitalization and behavioral change
- Energy security and resilience
- Alignment of national and international strategies
- Critical materials
- Just and inclusive transition



ONG-TERM





#### **Experts insights from scenario comparison studies**



JOINT IRENA - JRC EXPERT WORKSHOP ON **BENCHMARKING LONG-TERM SCENARIO COMPARISON STUDIES FOR THE CLEAN ENERGY** TRANSITION

> VIRTUAL EVENT THURSDAY 10 AND FRIDAY 11, SEPTEMBER 2020





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### **Experts insights from scenario comparison studies**



Common trends

- Power sector decarbonization with renewables
- Electrification of buildings, transport and industry
- Policies and technology success as key determinant of scenarios

#### Mixed view

- Degree of the end-use electrification
- Choice among alternative electrification strategies
- Energy consumption behavior





#### **Expert opinion on making net-zero scenarios more policy relevant**



Scopes

- Disruptive changes on the demand side
- System wide innovation
- Consumer behavior
- societal adaptations of policies

#### Methodologies

- Big models have a stronger supply side
- Inherently difficult to assess the end-use sector
- Putting scopes and narratives around scenarios





## Technology avenues in IRENA's net zero scenario

Renewable power	Energy efficiency
Direct electrification	Direct use of renewables
Hydrogen and its derivatives (indirect electrification)	CCS and CDR







**S** IRENA

## **Unpacking the electrification pathways**







## **Unpacking innovation**



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INNOVATION LANDSCAPE FOR A RENEWABLE-POWERED FUTURE: SOLUTIONS TO INTEGRATE VARIABLE RENEWABLES







## Challenges for the national energy planners

- Planning time horizon
- Scope of decarbonation
- Scopes of options strong focus on supply side options
- Increasing complexity of analysis – set up of national planning "eco-system"

ENERGY PLANNING DOCUMENTS AND						DATA COLLECTED			
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National Energy Transition Planning Dashboard