



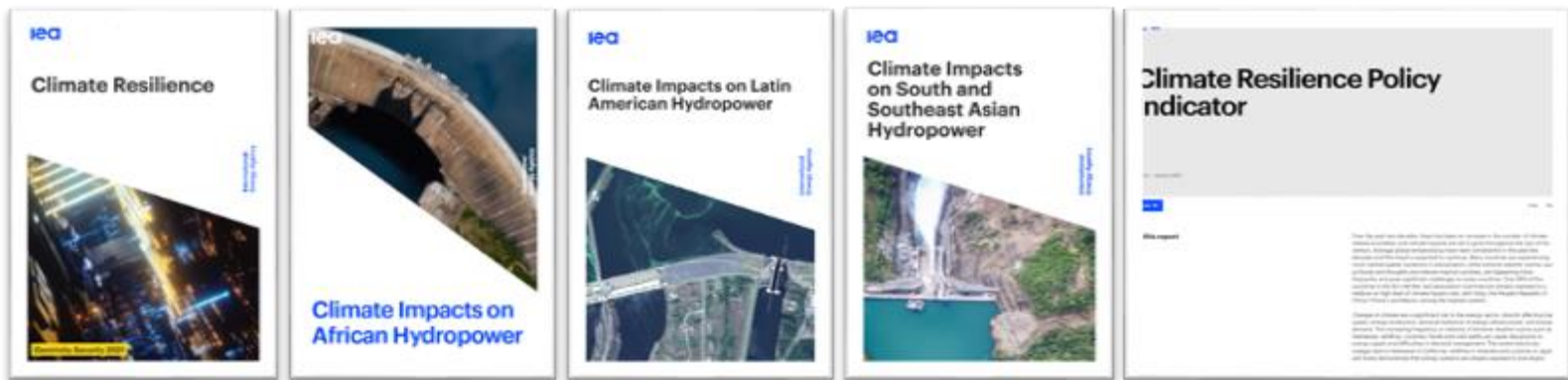
Climate-resilient Energy Infrastructure

2022 OECD Infrastructure Forum

Jinsun Lim 11 October 2022

The IEA contributes to climate resilience of energy systems

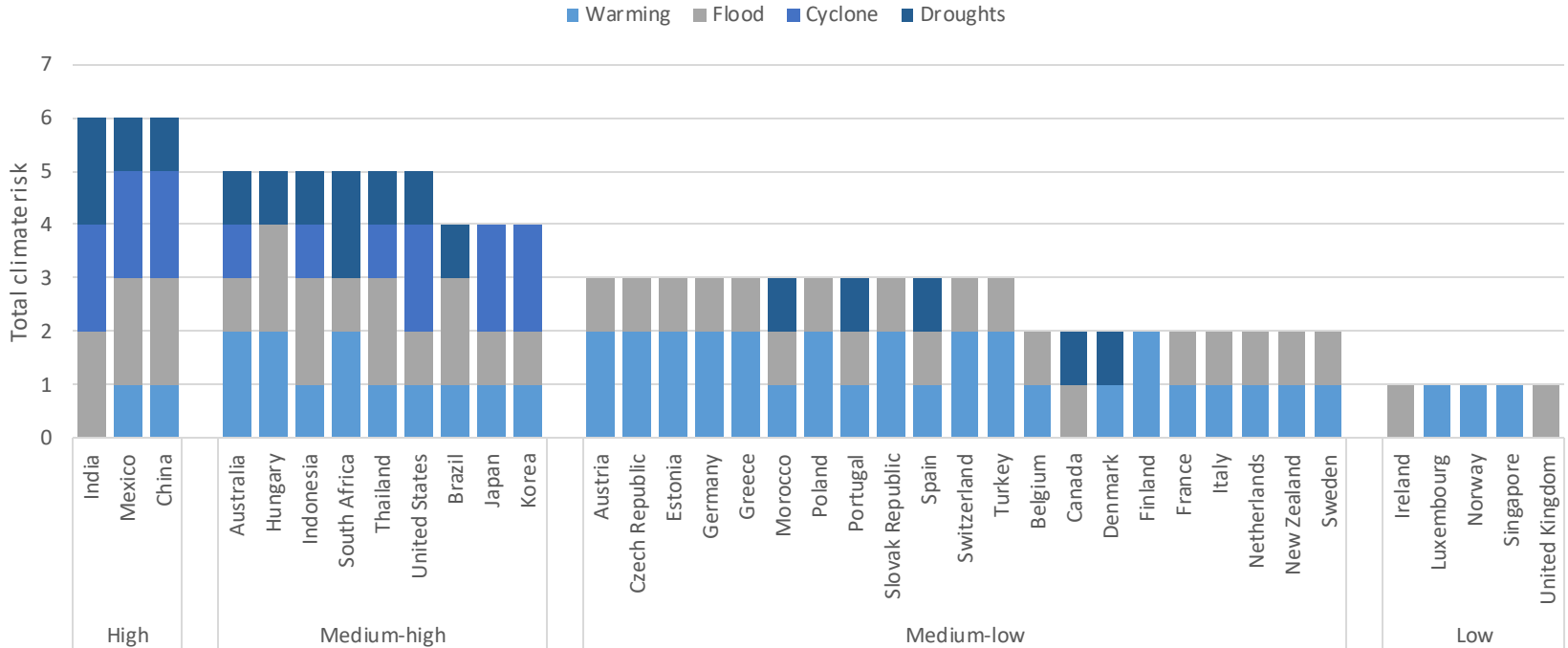
- IEA is actively working on assessing climate impacts and enhancing climate resilience
- **Climate resilience** refers to the capacity to anticipate, absorb, accommodate and recover from the effects from climate change



World Energy Outlook, Electricity Market Report, Hydropower Report, Country Reviews etc.

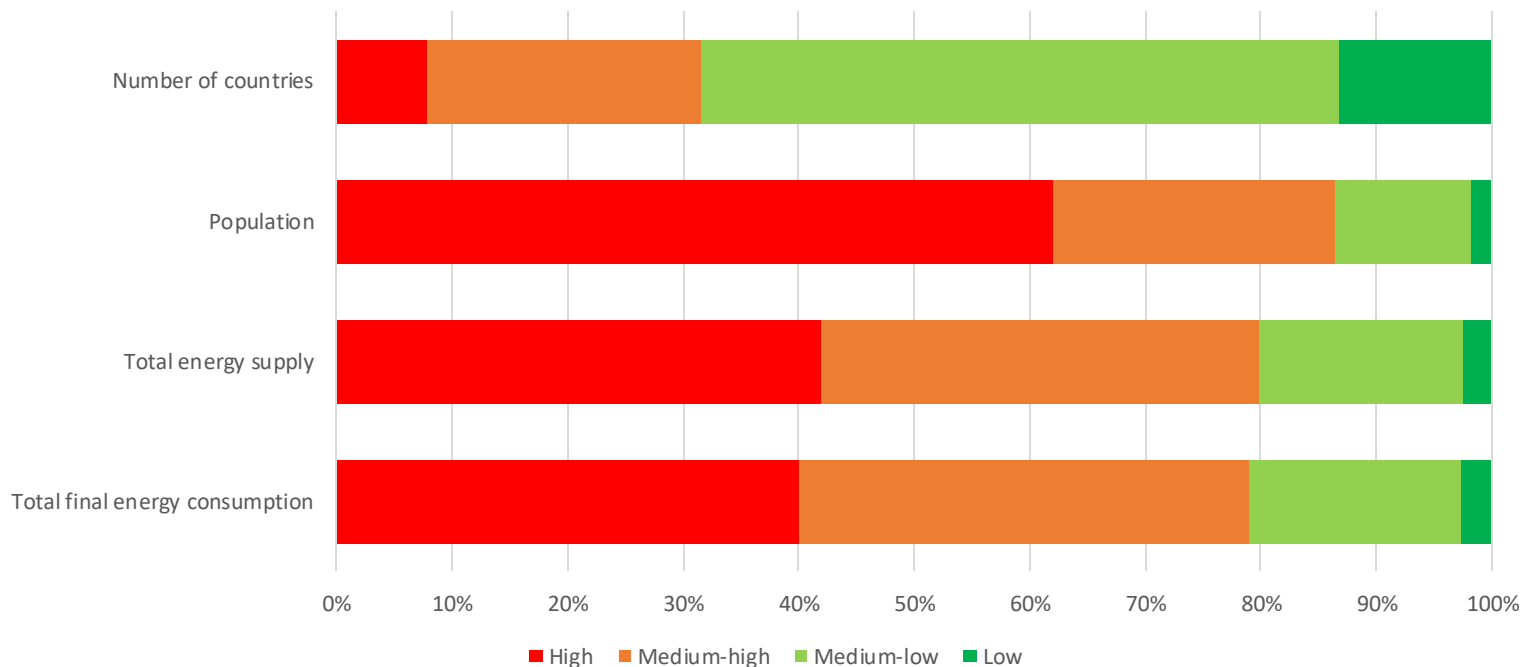
Countries are already exposed to climate hazard

The aggregated level of climate hazard of the IEA member and association countries



Countries ranked high in terms of climate hazard are...

The share of countries and population by level of overall climate hazard, IEA member and association countries



Countries with high or medium-high level of climate hazard are home to over 50% world population, accounting for over 50% of world's total energy supply and final energy consumption

Climate change poses an increasing threat to energy security

- Recent extreme weather events across the globe highlight the energy security risks that climate change brings.
- The world's energy systems must be ready to counter the growing climate threat

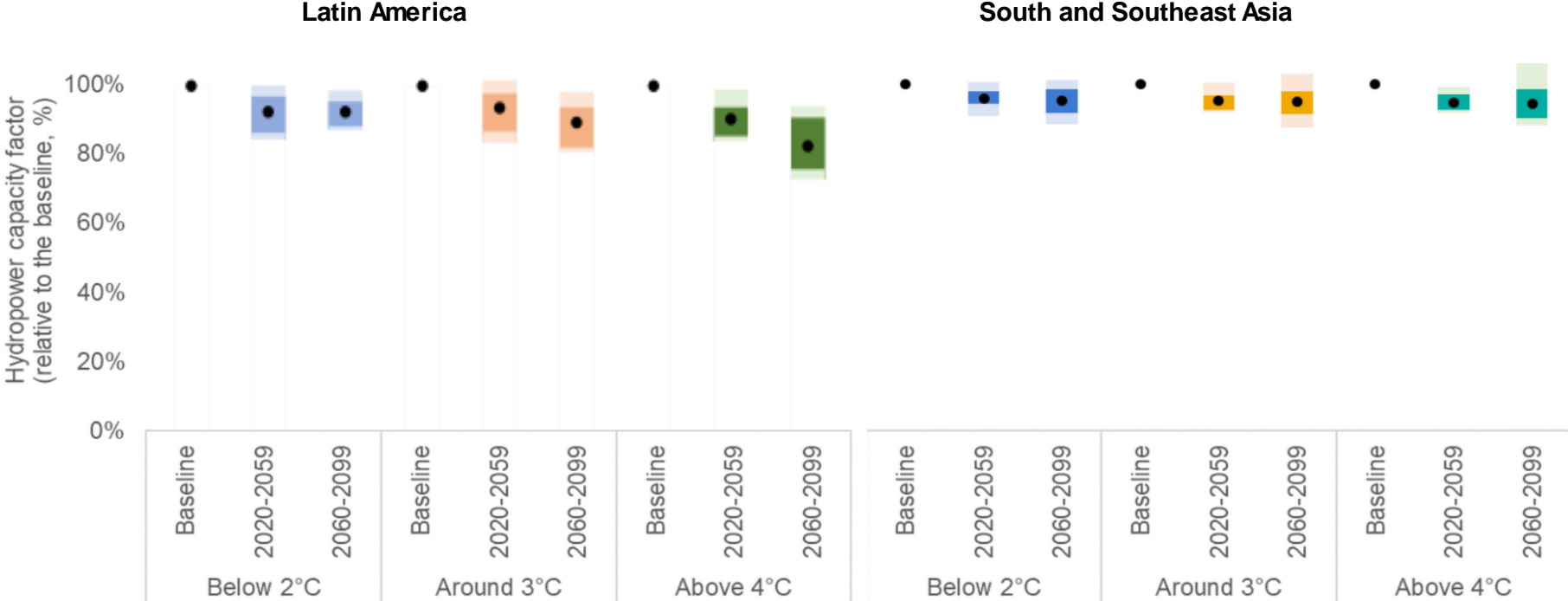
Overview of main potential impacts on the electricity system due to climate change

Climate impact	Generation	Transmission and distribution	Demand
Rising global temperatures	<ul style="list-style-type: none"> • Efficiency • Cooling efficiency • Generation potential • Need for additional generation 	<ul style="list-style-type: none"> • Efficiency 	<ul style="list-style-type: none"> • Cooling and heating
Changing precipitation patterns	<ul style="list-style-type: none"> • Output and potential • Peak and variability • Technology application 	<ul style="list-style-type: none"> • Physical risks 	<ul style="list-style-type: none"> • Cooling • Water supply
Sea-level rise	<ul style="list-style-type: none"> • Output • Physical risks • New asset development 	<ul style="list-style-type: none"> • Physical risks • New asset development 	<ul style="list-style-type: none"> • Water supply
Extreme weather events	<ul style="list-style-type: none"> • Physical risks • Efficiency 	<ul style="list-style-type: none"> • Physical risks • Efficiency 	<ul style="list-style-type: none"> • Cooling

Energy systems witness increasing pressure from climate change

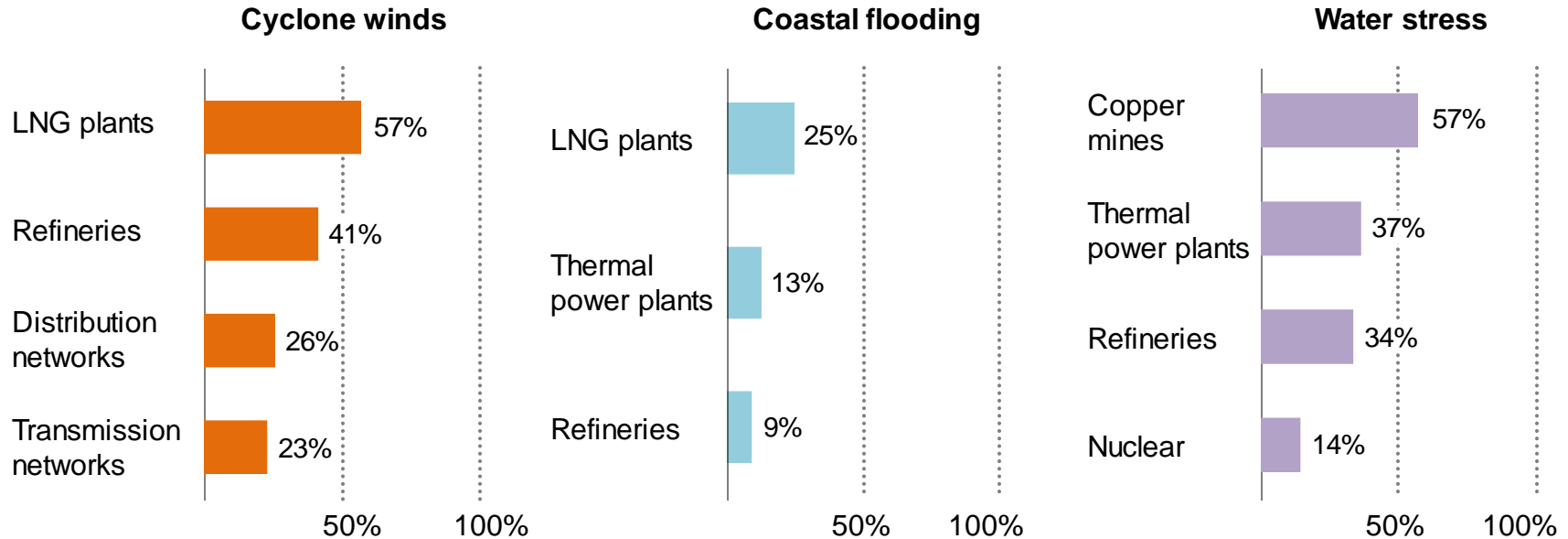
- Changing climate patterns put stress on hydropower generation in some regions.

Changes in regional mean hydropower capacity factor, 2020-2099, relative to 1970-2000, by scenario



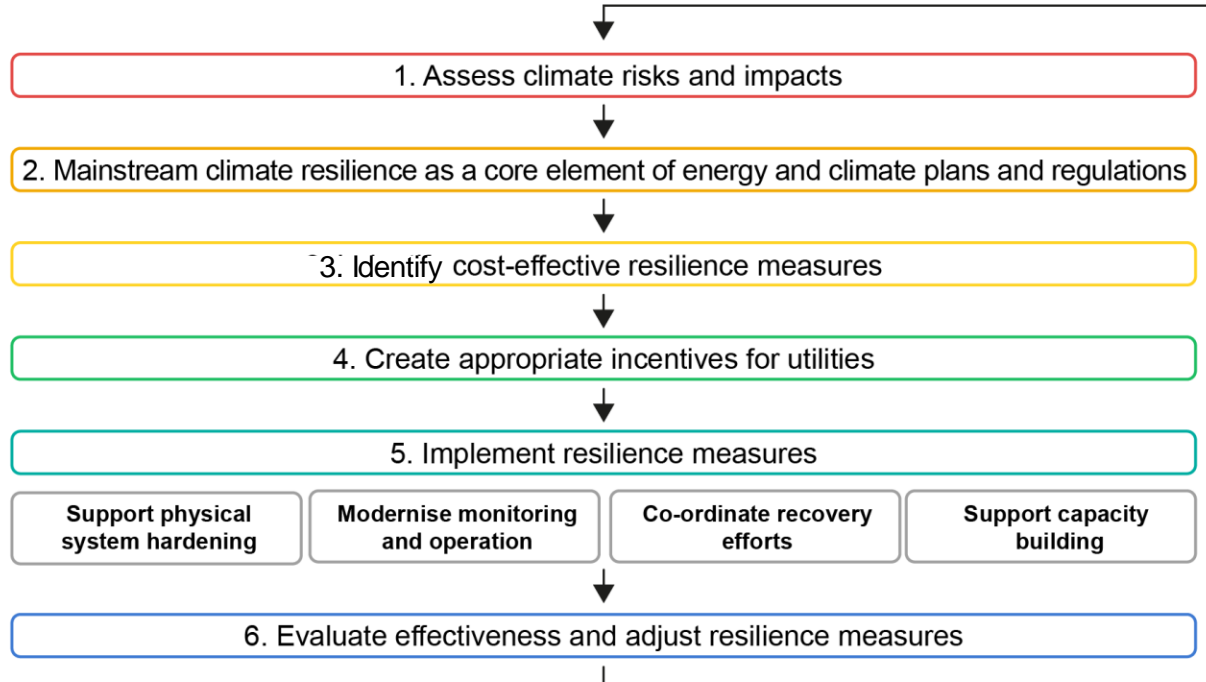
Growing stress from extreme weather events

Share of energy infrastructure exposed to high levels of physical climate risks, 2020



The increase in the frequency and intensity of natural disasters and extreme weather events highlights the urgent need for action to enhance the resilience of energy systems to climate change

Sequential application of measures for climate resilience



Effective policy measures and co-ordinated action among key actors can build up climate resilience.

- IEA plans to expand its work on climate impacts and resilience of energy systems
- **In 2023-2024, focus areas will be:**
 - General: Improving the resilience of energy systems against disasters and climate change
 - Region-specific: Climate resilience policy indicator for North Africa and the Middle East
 - Technology-specific: Climate resilience of electricity networks: focus on interconnections
 - Topic-specific: Investment needs for climate-resilient energy systems
- Raise awareness of climate impacts on energy systems



- Multilateral discussions on climate resilience in the energy sector
 - IEA Consultation Group on Climate Resilience for Energy Security

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Thank you