

## ADAPTATION AND RESILIENCE IN THE TRANSPORT, BUILDINGS, AND ENERGY SECTORS

### Who Is Adapting?

- Energy utilities and some regulators
- Transport networks and regulators
- Construction industry (associations, manufacturers, installers, surveyors, engineers)
- Governments: Local, regional, and national
- EU level: EU institutions, investment banks

### Why Are They Adapting?

- Costs of non-action: **\$3.8 billion/year** of damages to critical infrastructures and key investments in energy in transport, industry, and social sectors due to climate extremes in Europe<sup>1</sup>
- Benefits of adaptation: Estimated **\$113 billion** vs. costs of **\$44 billion** up to 2040 in Europe (cumulative)<sup>2</sup>
- Legislation and land-use planning
- Changes in industry standards

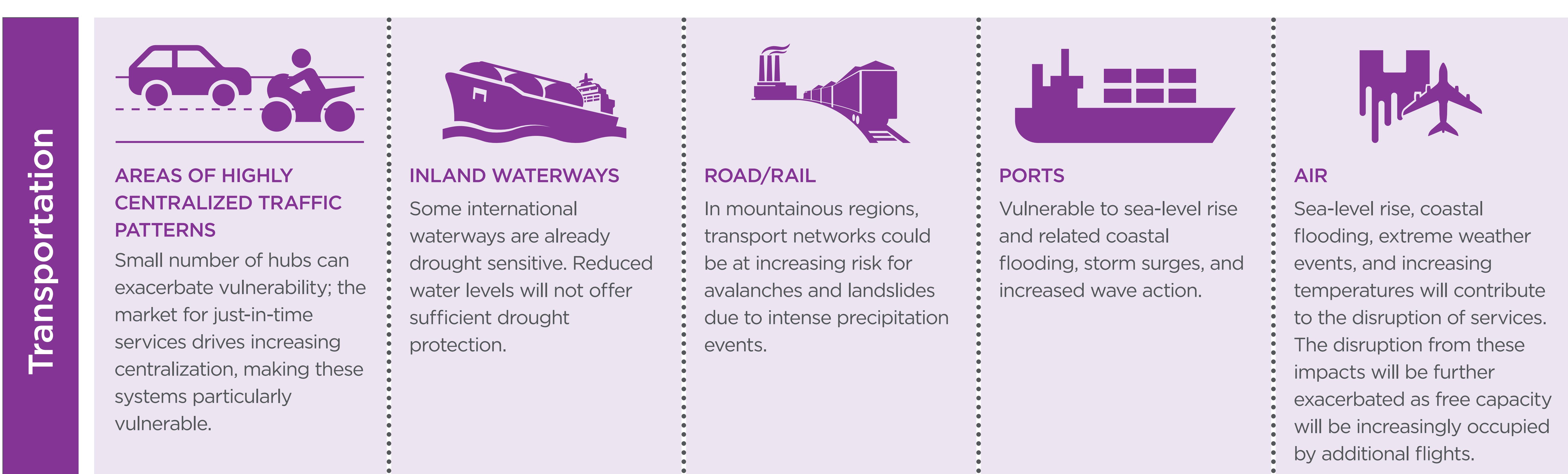
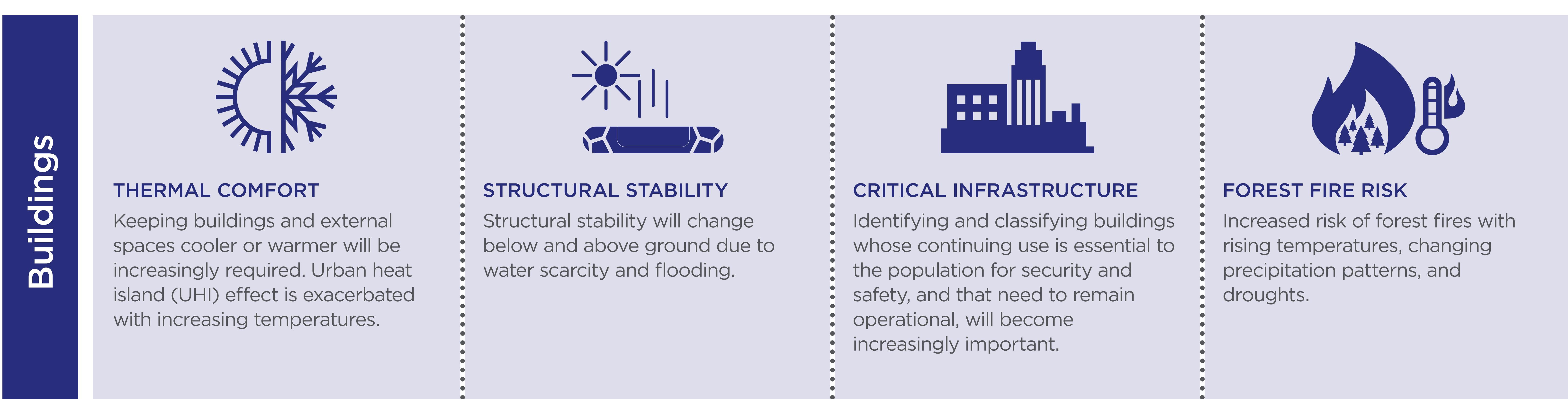
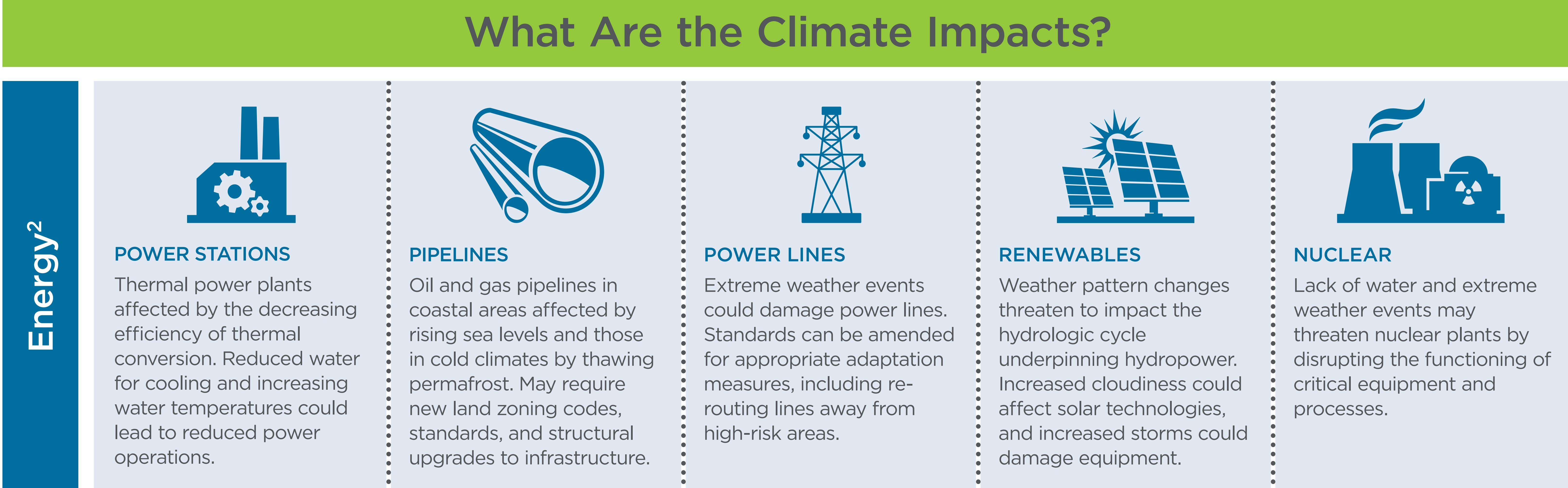
### What Are the Most Common Adaptation Measures?

- Engineering solutions: Infrastructure strengthening and increasing capacity
- Knowledge transfer actions: Awareness-raising, surveys, and training
- Operational measures: Integration into standards, maintenance regimes
- Ecosystem-based Adaptation (EbA): E.g., nature-based water management solutions

### Rebuilding Critical Infrastructure in Puerto Rico

Following the 2017 hurricanes, Navigant is advising on Puerto Rico's power and grid rebuild. We manage the implementation and have:

- Assessed the damage
- Described the new system design
- Engaged stakeholders
- Proposed rebuild roadmap
- Defined first level funding requirements
- Established the Project Management Office (PMO)



#### Reference

1. Sarah Hendel-Blackford, Kristen Brand, Sam Nierop, Rob Winkel (2017) Assessing Adaptation Knowledge in Europe: Infrastructure Resilience in the Transport, Energy and Construction Sectors. Final Report to the European Commission, DG CLIMA, Project Number DESNL16057.

2. European Climate Foundation, the World Energy Council, and the University of Cambridge's Judge Business School and Institute for Sustainability Leadership (2014) Climate Change: Implications for the Energy Sector.

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