



# **Transboundary impacts affecting Finland**

## ***Developing the impact pathways approach to support adaptation planning***

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# Mitigation vs adaptation: Different geographical scopes

- *Mitigation* is inherently international in scope as greenhouse gases do not stop at national borders
- *Adaptation* has often been seen as a local issue, and the focus has been on impacts that can be directly attributed to changes in the local climate



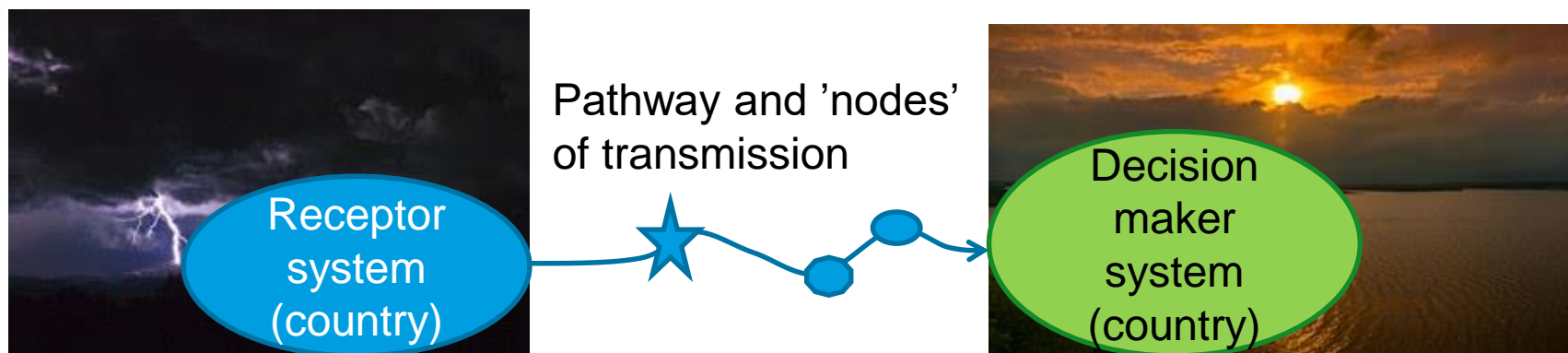
# Transboundary impacts of climate change

- Transboundary impacts = *Impacts of climate change that are felt within a country due to changes in the climate of other countries*
- In a highly globalized and interconnected world, impacts of climate change can spread in diverse, complex and unforeseen ways to places far removed from the original impact

Benzie et al. (2016). Introducing the Transnational Climate Impacts Index 2016: Indicators of country-level exposure – methodology report. Stockholm Environment Institute Working Paper No. 2016-07



# The task is to identify the pathways of transboundary impacts



Modified based on Benzie (2015):  
<https://www.weadapt.org/knowledge-base/adaptation-without-borders/conceptual-framework-for-assessing-indirect-impacts-of-climate-change>



# Possible pathways of transboundary impacts for Finland

## Trade

Changes and disruptions in flows of commodities contribute to volatility in prices and supply; regional shifts in comparative advantage

## Infrastructural

Damage to infrastructure required for international transport or communications links or for handling and distribution of goods

## Financial

Repercussions via overseas investments, global insurance and the international financial markets

## Human mobility

Altered migration flows or changes in the patterns of immigration and tourism

## Biophysical

Cross border movements of species, changes in the hydrology of transboundary waterways, transboundary air or water pollution

## Geopolitical

Adjustment of international relations concerning crisis management, peacekeeping, defense, humanitarian assistance, regional or international climate policies

## Cognitive

Knowledge and insights of impacts elsewhere lead to action in Finland and to support for adaptation outside the Finnish borders



# Transboundary impacts on the energy sector

Trade

Volatility in prices, changes in the availability of energy products

Infrastructural

Disruptions to energy supply due to damages to energy infrastructure or distribution networks

Financial

Access to financing and costs of financing investments in energy production and transmission (linked to trade)

Biophysical

Changes in run-off or streamflow of transboundary rivers affecting hydropower production (linked to trade)

Geopolitical

International or regional climate policies affecting energy prices and/or energy mix, energy security as policy issue

Cognitive

Awareness of development elsewhere affects strategic choices (linked to trade and geopolitical pathways)



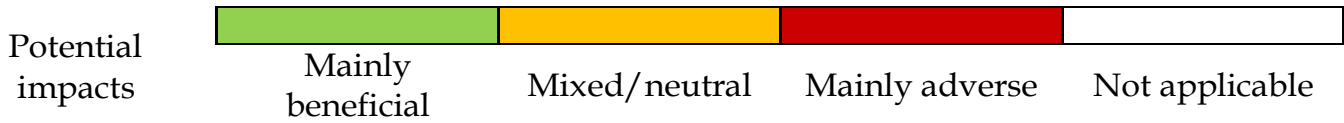
# Recognition of transboundary impacts within public and private sectors

- Interviews done among actors in sectors suggest general awareness, but so far limited systematic analysis. Transboundary impacts not a top priority.
  - Some sectors are more aware than others, e.g. insurance, finance, energy, international cooperation
- **Implication:** The cognitive pathway links to many of the other pathways and is likely to be crucial for action



Groundstroem et al. (in prep.)

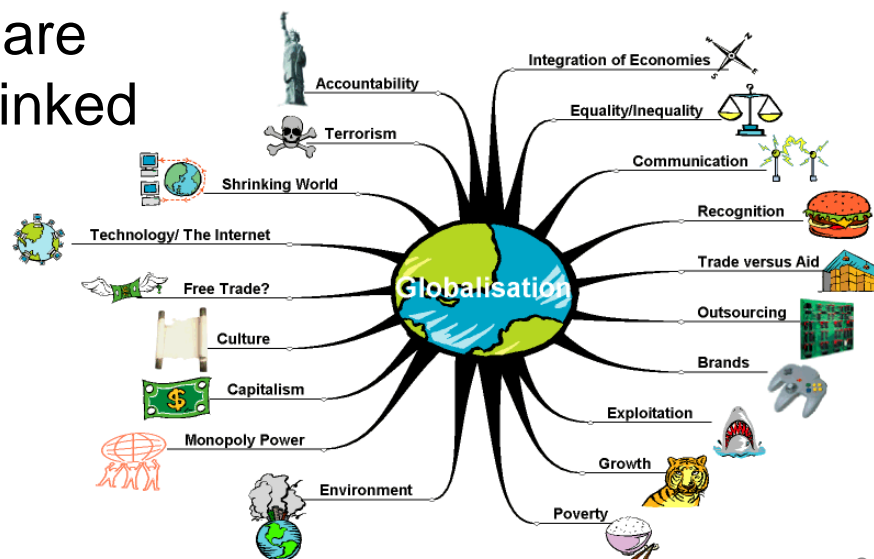
Sector \ Pathway	Primary and manufacturing industries	Energy	Transport	Business and finance	Tourism	Population	Human health	Biodiversity	Foreign policy	Development cooperation
Trade	Red	Red	Yellow	Green	White	White	Yellow	Yellow	Yellow	Red
Infrastructural	Red	Red	Red	Red	Red	White	Red	Red	White	Red
Financial	Red	Red	White	Red	Red	White	White	White	White	Green
Human mobility	White	Yellow	Yellow	Green	Green	Red	Red	Yellow	White	Red
Biophysical	Red	Red	Yellow	White	Yellow	White	Red	Red	Yellow	Red
Geopolitical	Yellow	Red	Red	Red	Yellow	Yellow	Red	White	Yellow	Red





# Challenges in dealing with transboundary impacts

- The novelty and the multitude of related concepts
- Time-consuming and laborious to document detailed information on international connections of a country
- Transboundary impacts of climate change are included in a number of other global processes
- Transboundary impacts are dynamic and often interlinked



# Recommendations for adaptation in Finland

- Regular assessments needed especially in international sectors
- Greater regional and international cooperation, as well as between national sectors and agents
- Proactive adaptation and the creation of contingency plans
- Global aspects of climate change need to be incorporated into education at all levels
- Awareness of transboundary impacts should lead to regular updating of the pathways approach





**Thank you!**