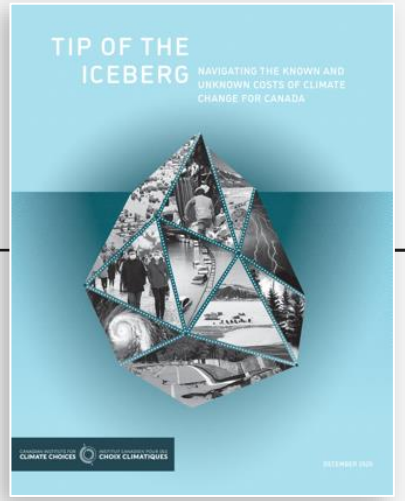
DAMAGE CONTROL

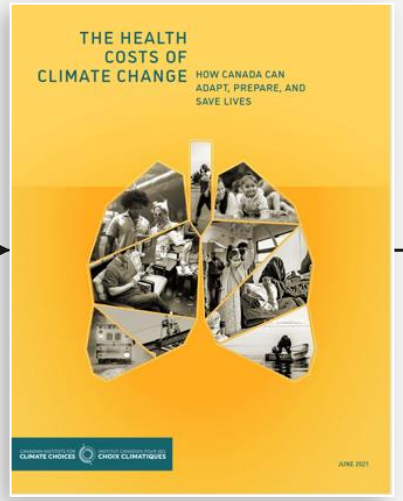
Projecting the Future Costs of Climate Change in Canada

CANADIAN CLIMATE INSTITUTE / L'INSTITUT CLIMATIQUE DU CANADA

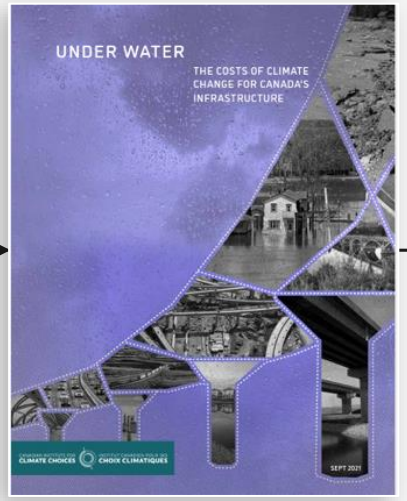
Costs of Climate Change series



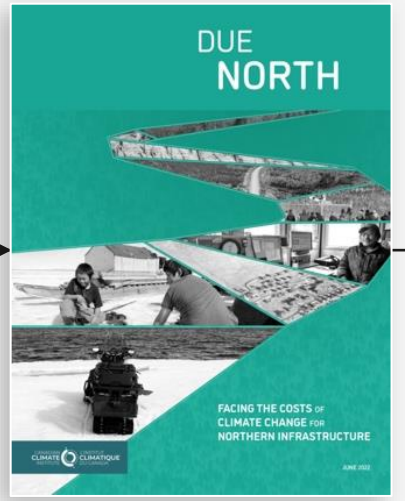
Tip of the Iceberg
December 2020



Health Costs
June 2021



Under Water
September 2021



Due North
June 2022

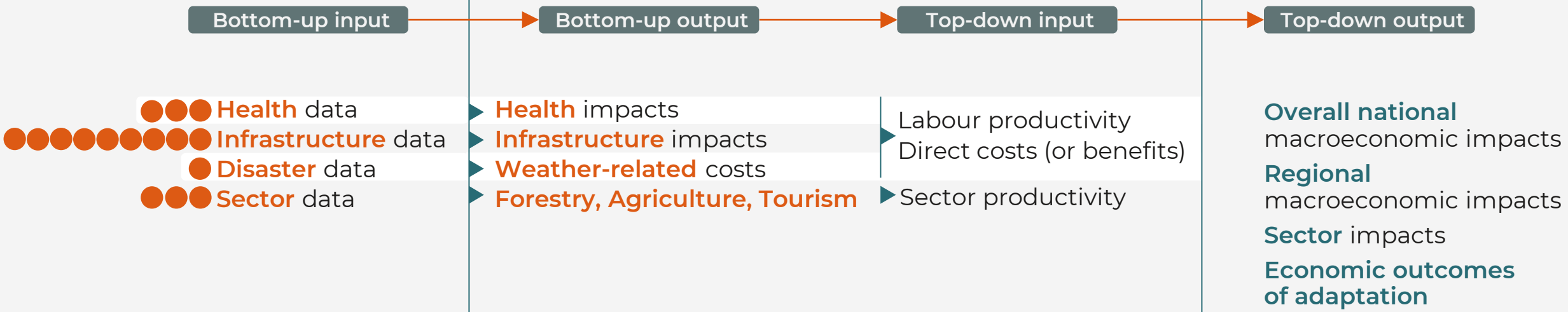
Damage Control
September 2022

Our Approach

1. Identification of **16 material climate impact areas**

2. Bottom-up analysis of **costs and benefits**

3. Top-down **macroeconomic** and **affordability impacts**



Our Approach

16

"bottom up" climate impact areas

high-res, national-scale analysis

AGRICULTURE

Agricultural yield

INFRASTRUCTURE

Electricity infrastructure damage
Coastal and inland flooding
Hydropower supply
Electricity demand
Road damage
Rail damage
Road delay
Rail delay

DISASTERS

Weather-related disasters

NORTHERN INFRASTRUCTURE

Permafrost thaw

HEALTH

Labour productivity
Premature death
Illness

TOURISM

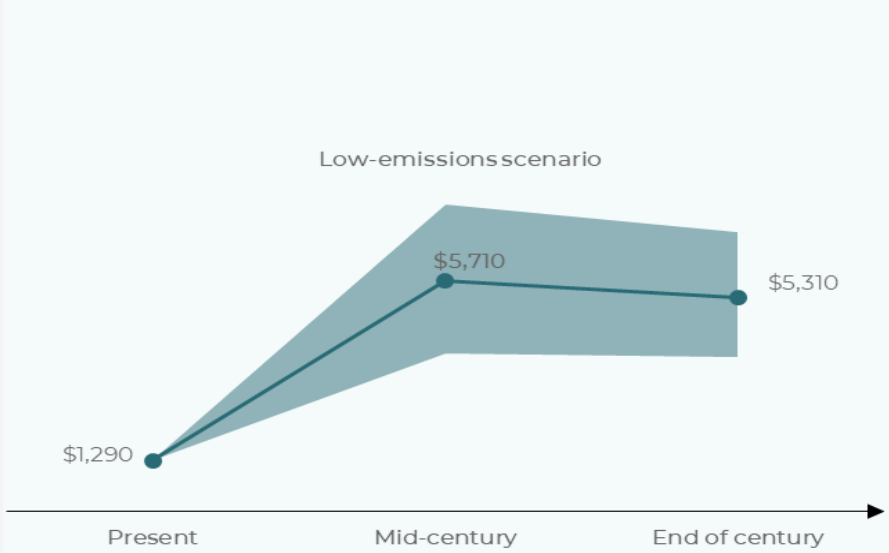
Tourist arrivals

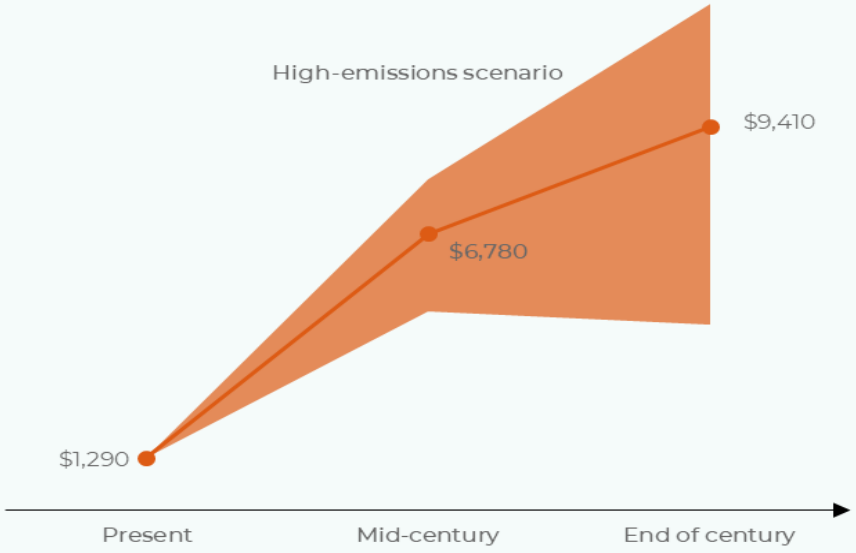
FORESTRY

Timber harvest volumes

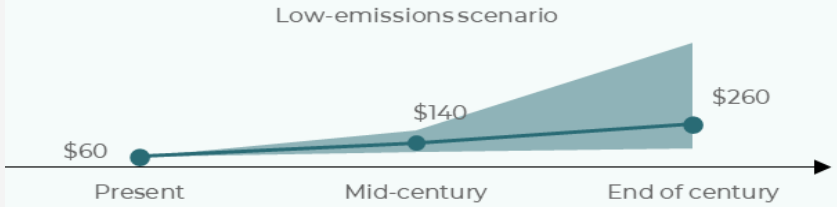
Infrastructure damage may accelerate rapidly

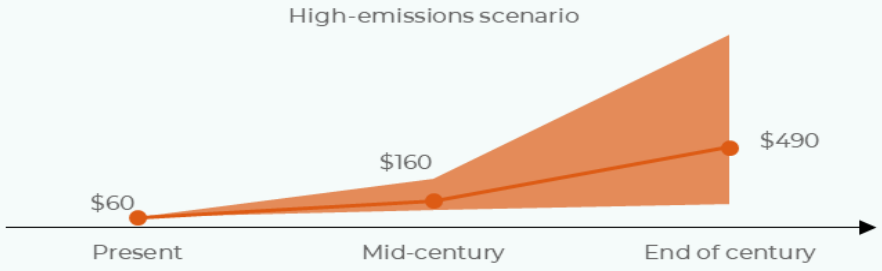
Inland flooding: projected annual costs in millions of dollars (2019 CAD)



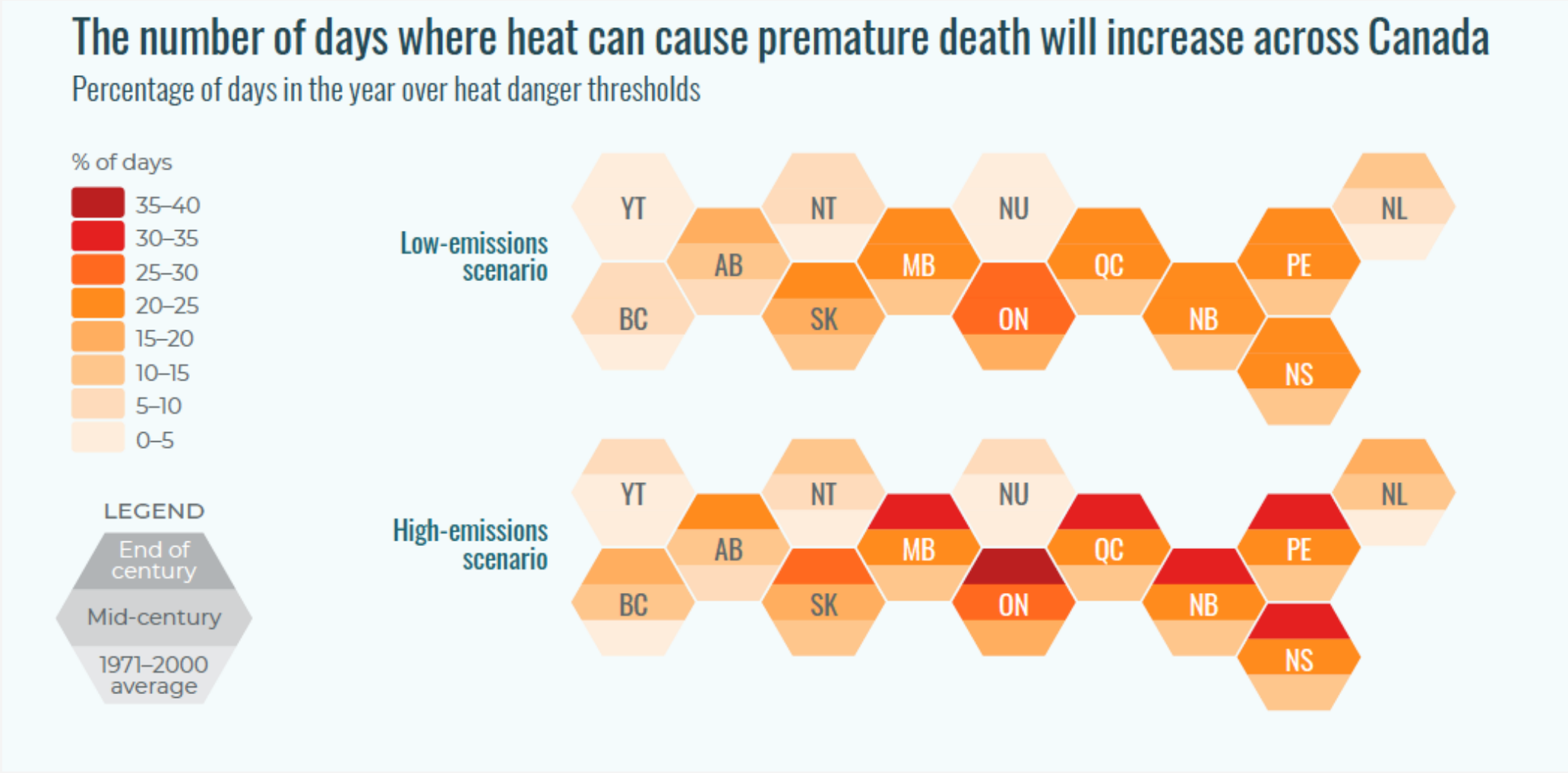


Coastal flooding: projected annual costs in millions of dollars (2019 CAD)

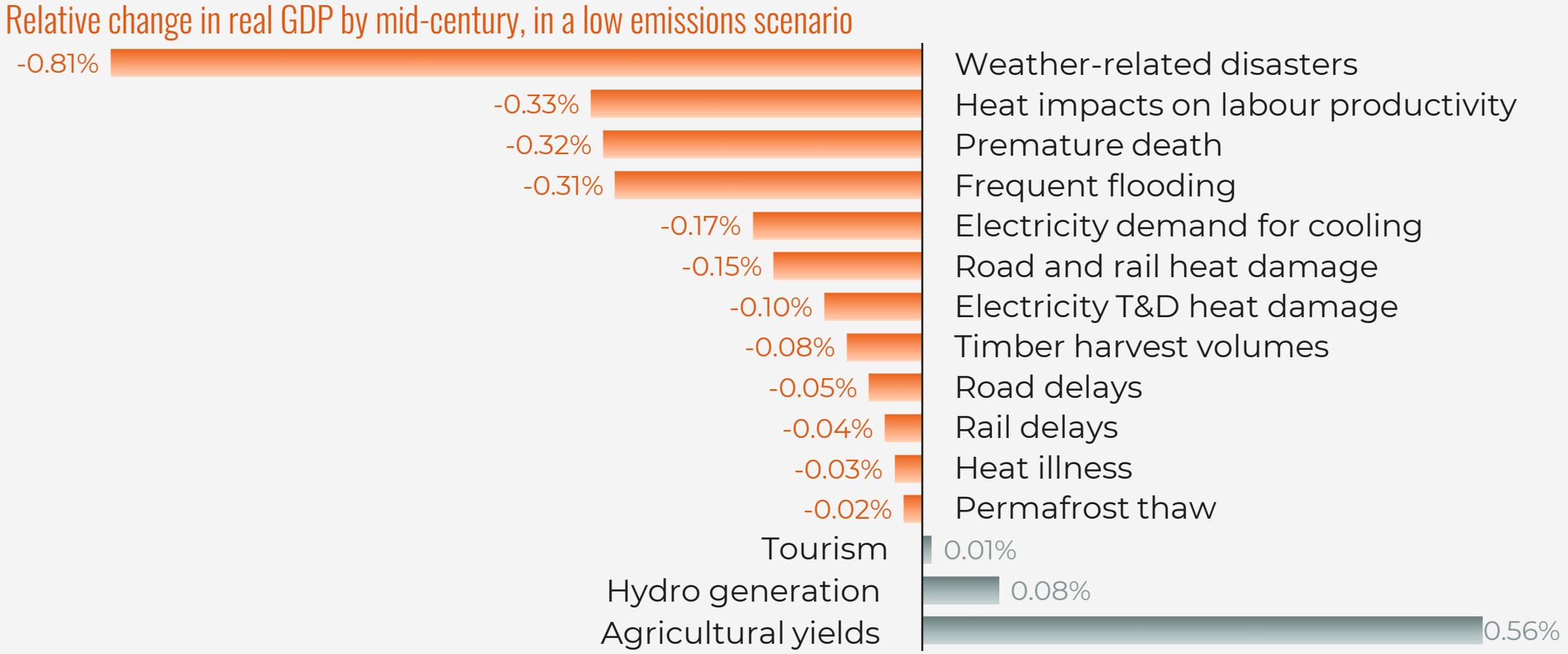




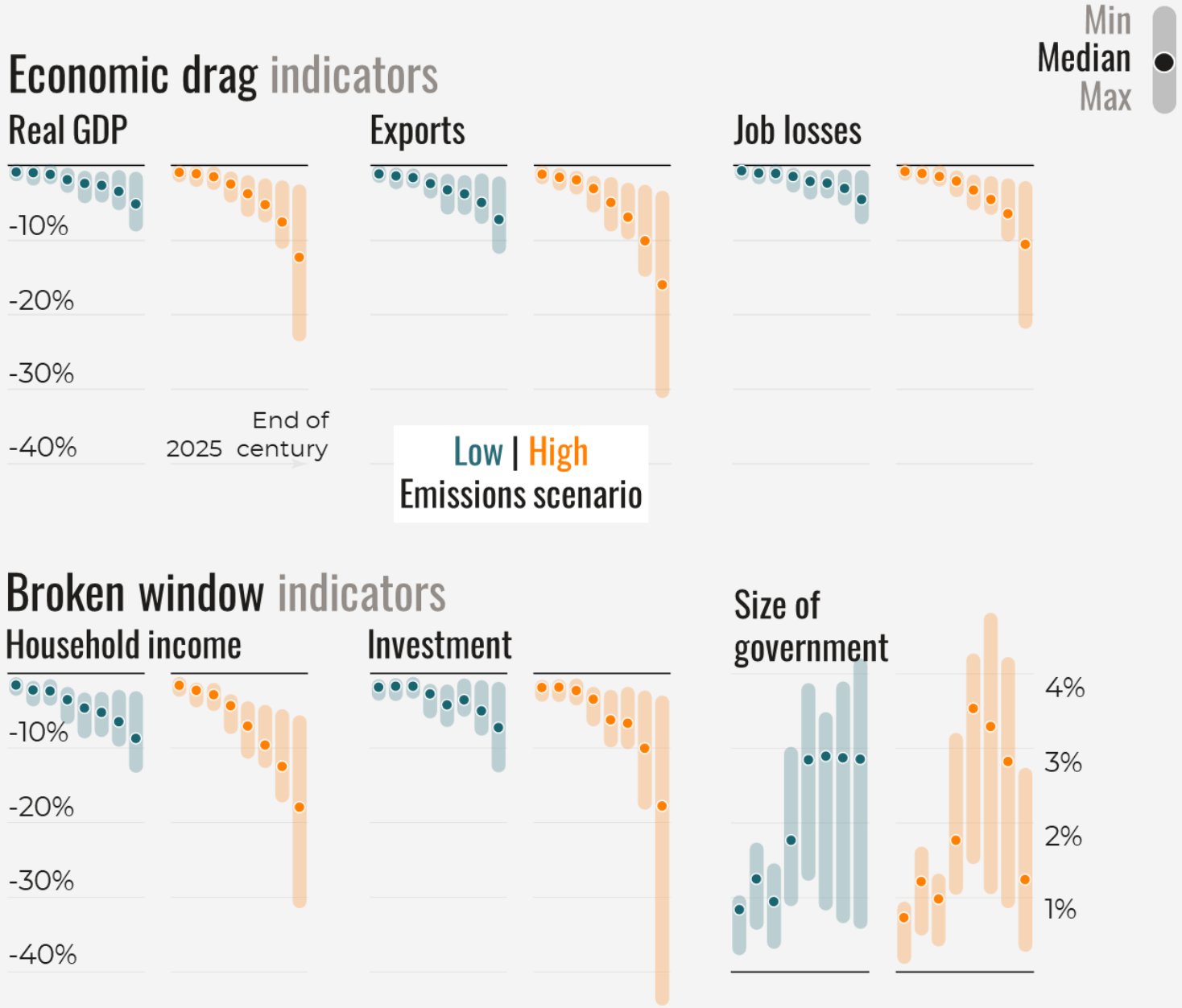
Health costs could exceed costs of physical damage



Economic implications are widespread and compounding

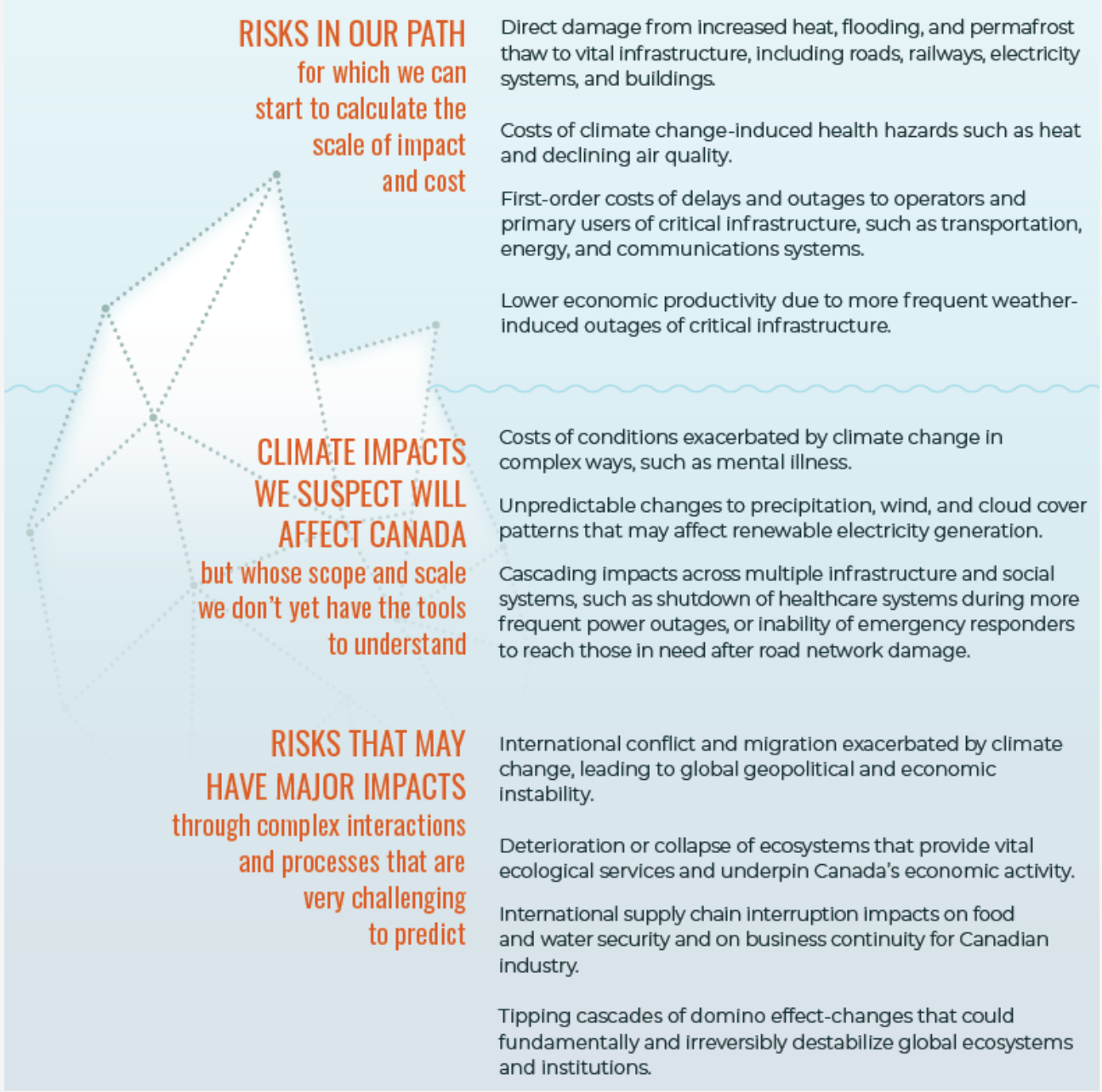


A smaller economic pie makes life less affordable

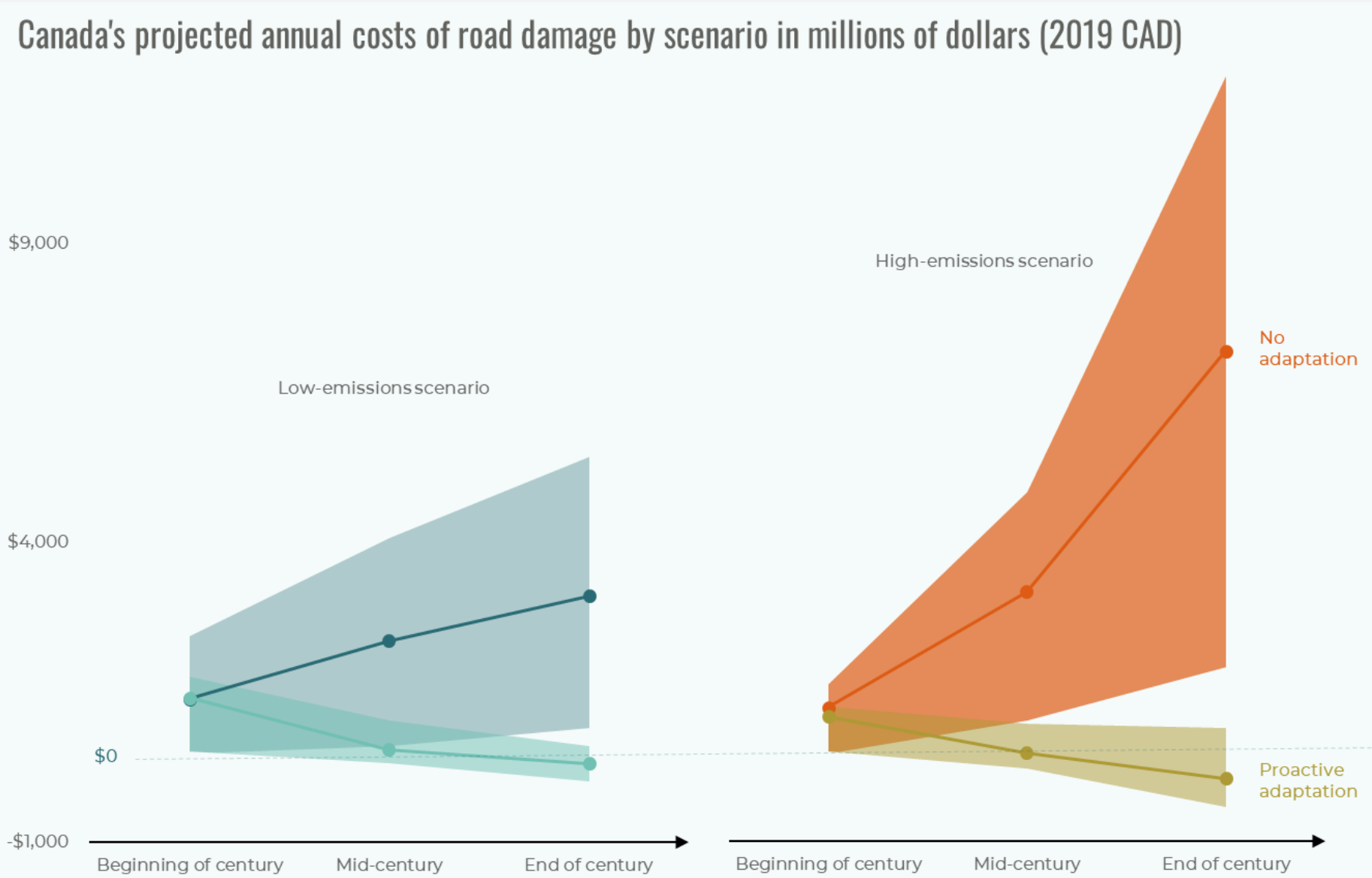


“Tip of the Iceberg”

The climate change costs and impacts that we can estimate are likely only a fraction of the total

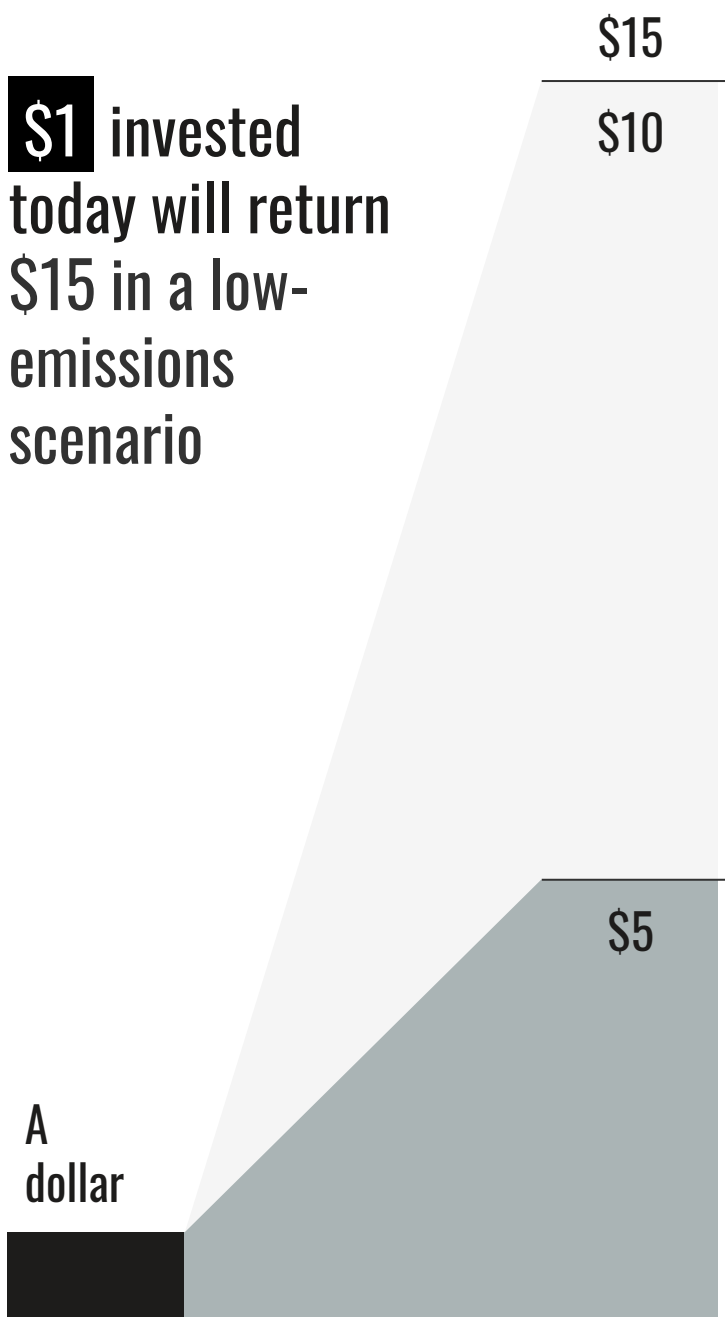


Proactive adaptation can save billions



Adaptation investments pay big social dividends

$1 invested today will return $15 in a low-emissions scenario



Economy-wide benefits

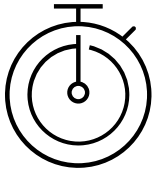
Knock-on benefits associated with avoided direct costs, such as avoided disruption of supply chains, avoided loss of labour productivity, and avoided loss of income.

Direct benefits

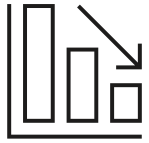
Reduction of costs directly associated with the adaptation measure, such as reduction in cost of repair or replacement of lost or damaged infrastructure.

Key Takeaways

Damages are happening today



Income and prosperity will decline



No good scenarios

Proactive adaptation + global mitigation

Actions for Governments

1. **Build climate impacts and adaptation policies** into economic decision making.

2. Encourage—and where appropriate, mandate—accounting for climate change risks in **private-sector decision making.**

3. **Scale-up adaptation measures** to match the magnitude of the risk Canada faces.

4. **Double down on aggressive reductions** in emissions both at home and abroad.

5. **Invest in understanding and preparing** for the economic risks of climate change that have not yet been modelled.