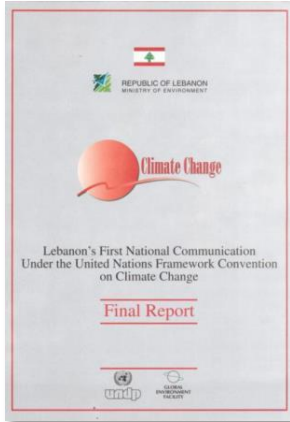


Economic Costs to Lebanon from Climate Change:

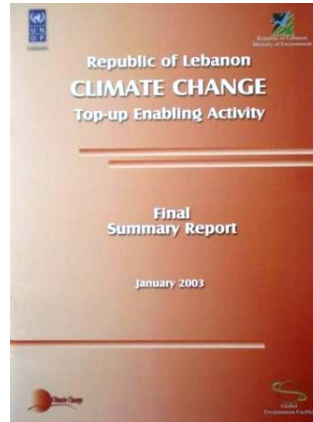
A First Look

Lea Kai Aboujaoude
Ministry of Environment
Lebanon

Studying climate change for 20 years



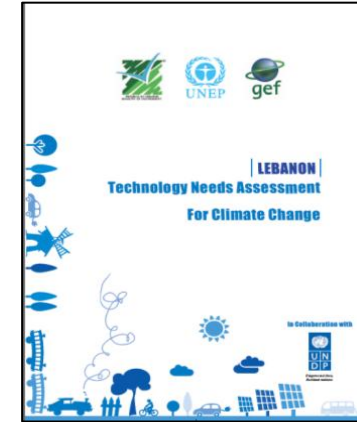
INC
1999



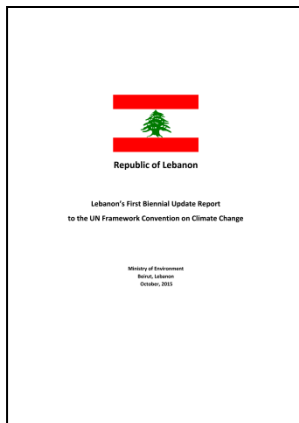
Update
2000



SNC
2011



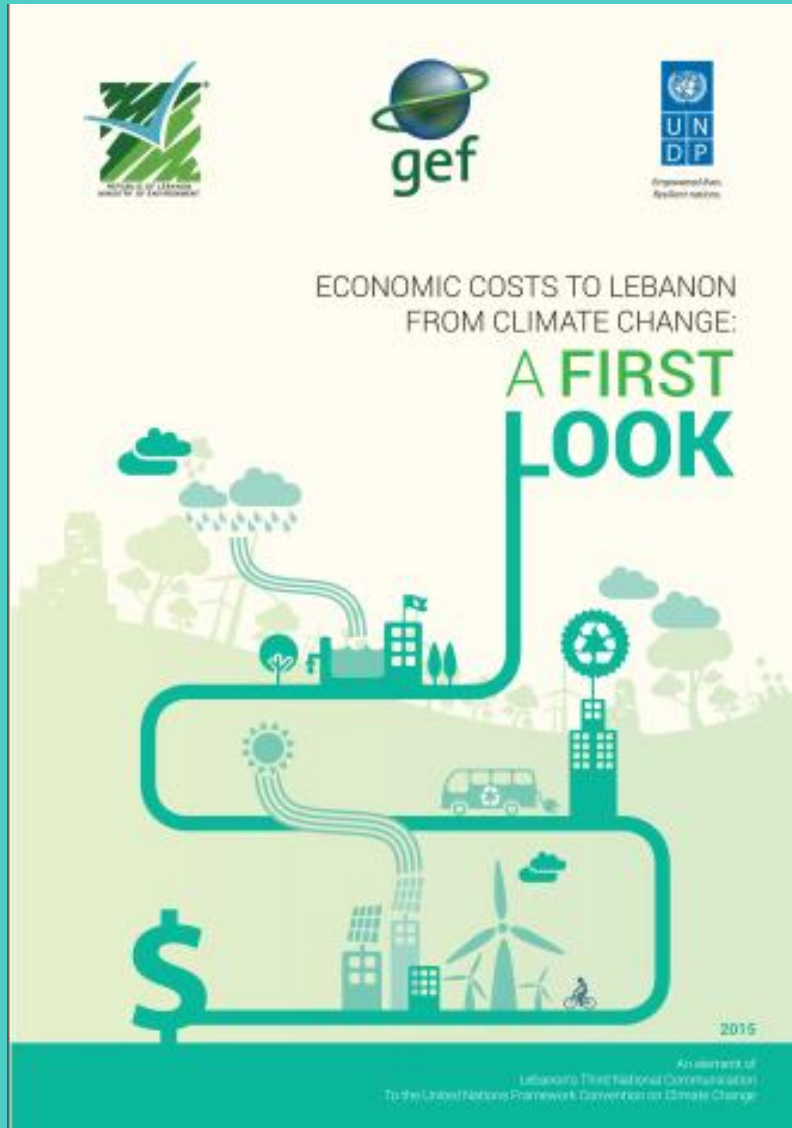
TNA
2012



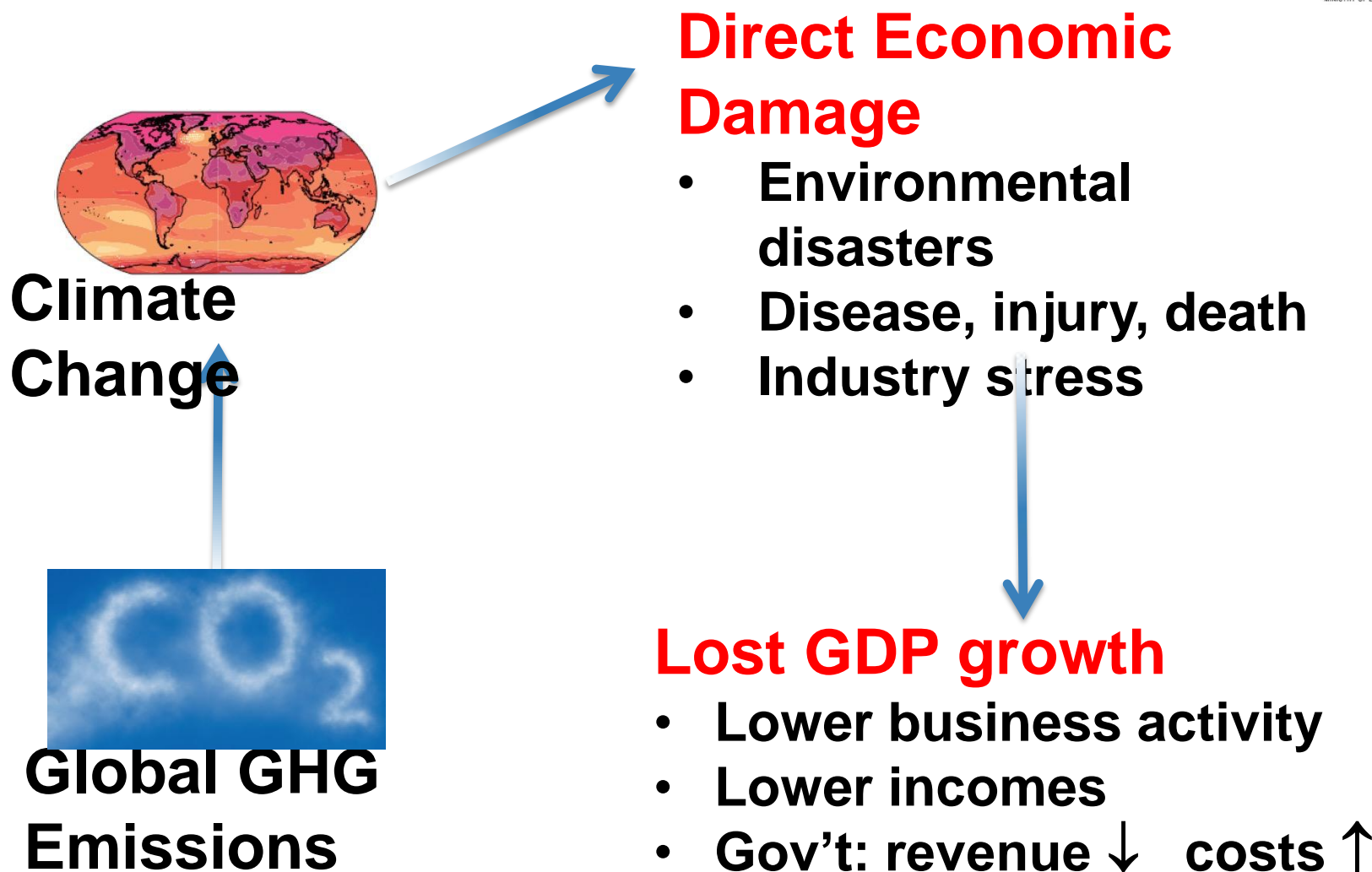
BUR
2015

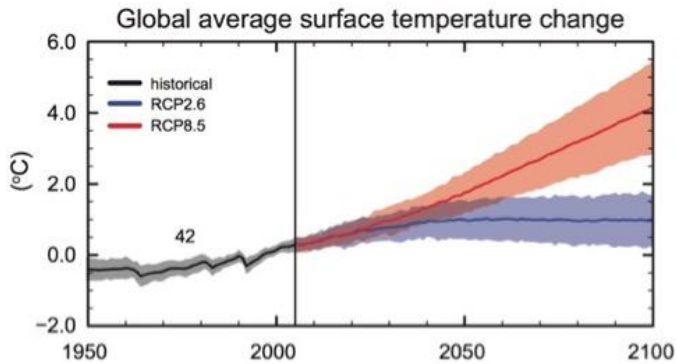


Economic cost
2016

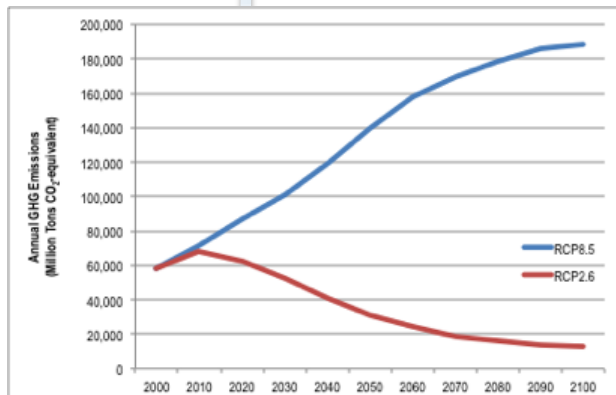


Potential economic costs that the **households, businesses, communities, and government** of Lebanon might incur over the next several decades if the world continue to behave in a **business-as-usual** manner.





Change



Direct Economic Damage

- Environmental disasters
- Disease, injury, death
- Industry stress

Lost GDP growth

- Lower business activity
- Lower incomes
- Gov't: revenue ↓ costs ↑

Methodology



2020



Near-term
costs that
cannot be
avoided



2040



Costs that likely
would materialize
within the lifetimes
of most citizens
alive today



2080



Costs that likely
would materialize
within the
lifetimes of
today's children.

Tools used

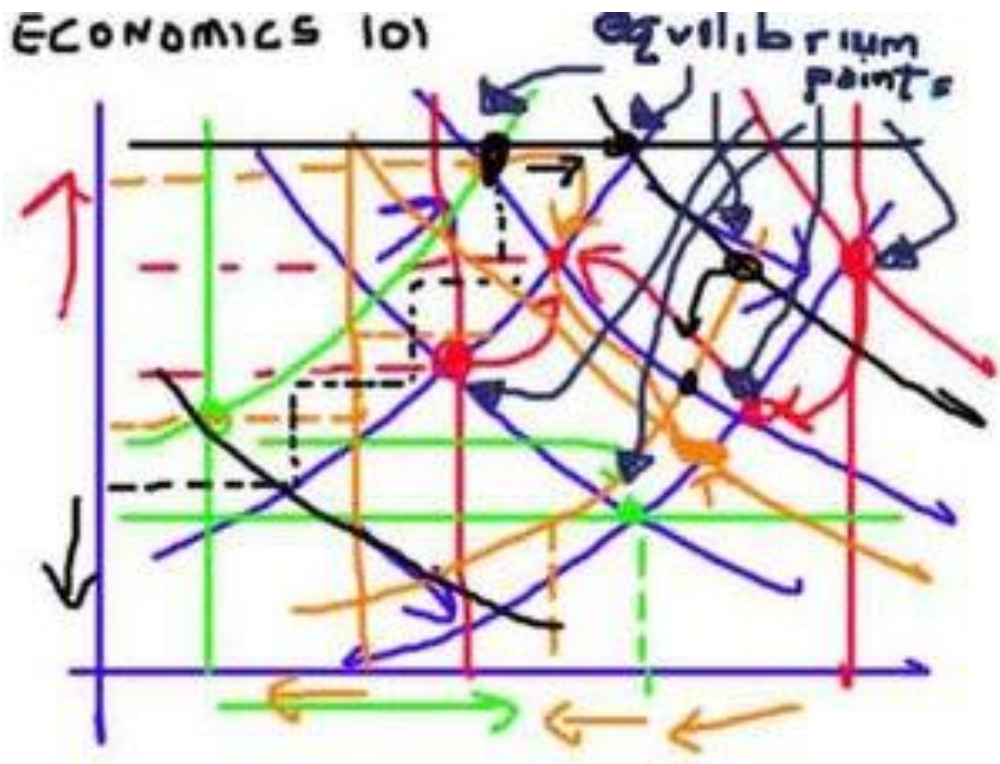


No Economic model was used
 No new data was generated



Existing climatic data available
 on a national regional and
 global levels

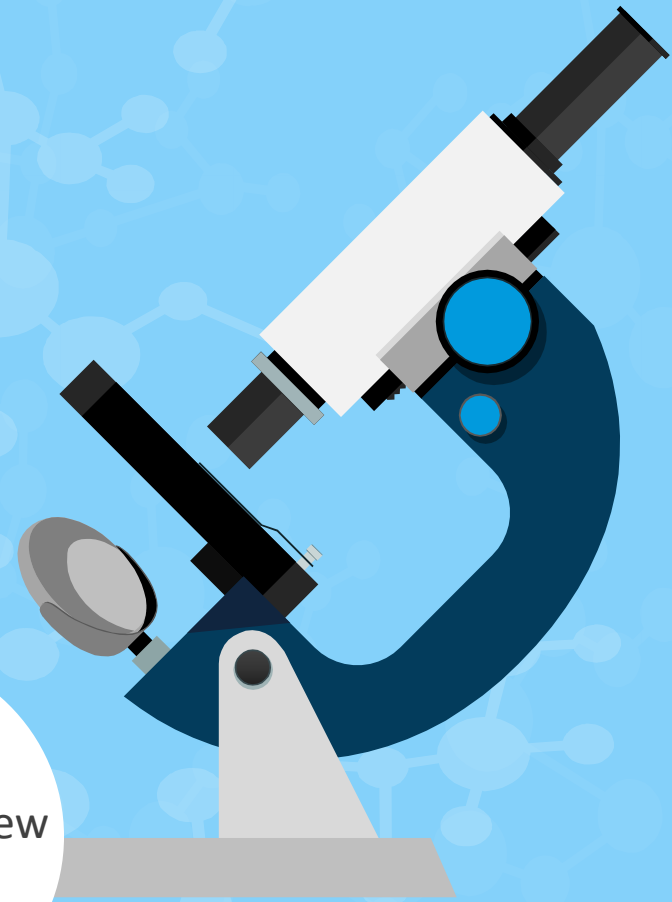
Deductive analysis



General overview

Impact on Lebanon's
economic growth

Sectoral overview



General approach

Globally, GHG emissions will reduce GDP growth from 3.2% to 2.6%*

In Lebanon 2020, GDP will be reduced from 55.4 to 53.8 Billion USD
=
1.6 Billion USD foregone GDP

Direct annual damage in each year is 1/5th of foregone GDP*

In Lebanon 2020,
=
320 million USD direct damage

Cost on households

Cost on government

* Moore and Diaz (2015)
Interagency Working Group on Social Cost of Carbon (2015).

Sectoral approach



Example: reduction in wheat production



Sectors considered in study



Agriculture and food

Reductions in Lebanon's agricultural production, in fish harvest and in food prices



Water

Reductions in agricultural and domestic /industrial water supply
And reduction in generation of hydroelectricity



Natural disasters and ecosystems

Increases in droughts, floods/landslides, and storms

Reductions in biodiversity, land degradation, sea level rise



Tourism

Reductions in attractiveness of Lebanon's coastal resources



Electricity

Increases in demand for cooling



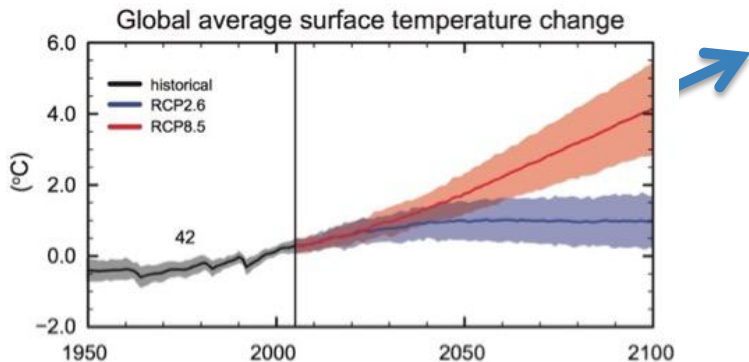
Human health and society

Increases in risk of death and illness.
Increases in violence, in workers' productivity and internal migration

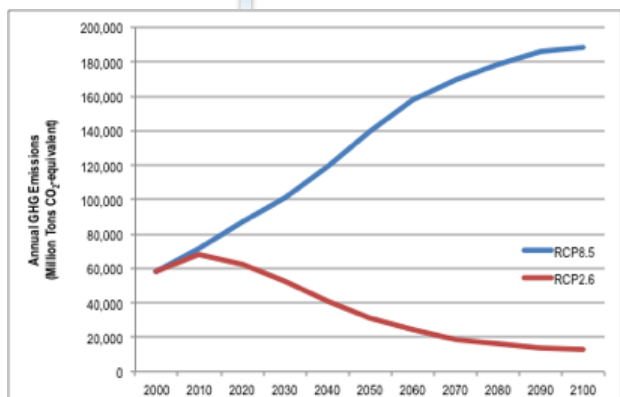
Results



*Empowered lives.
Resilient nations.*



Change



Cumulative emissions:

USD Million

2020

2040

2080

Slower GDP growth

1,600

14,100

115,700

Direct Economic Damage

320

2,800

23,200

Total

1,900

16,900

138,900

Gvt: 610

5,400

44,300

Hld\$ 1,500

13,100

107,200

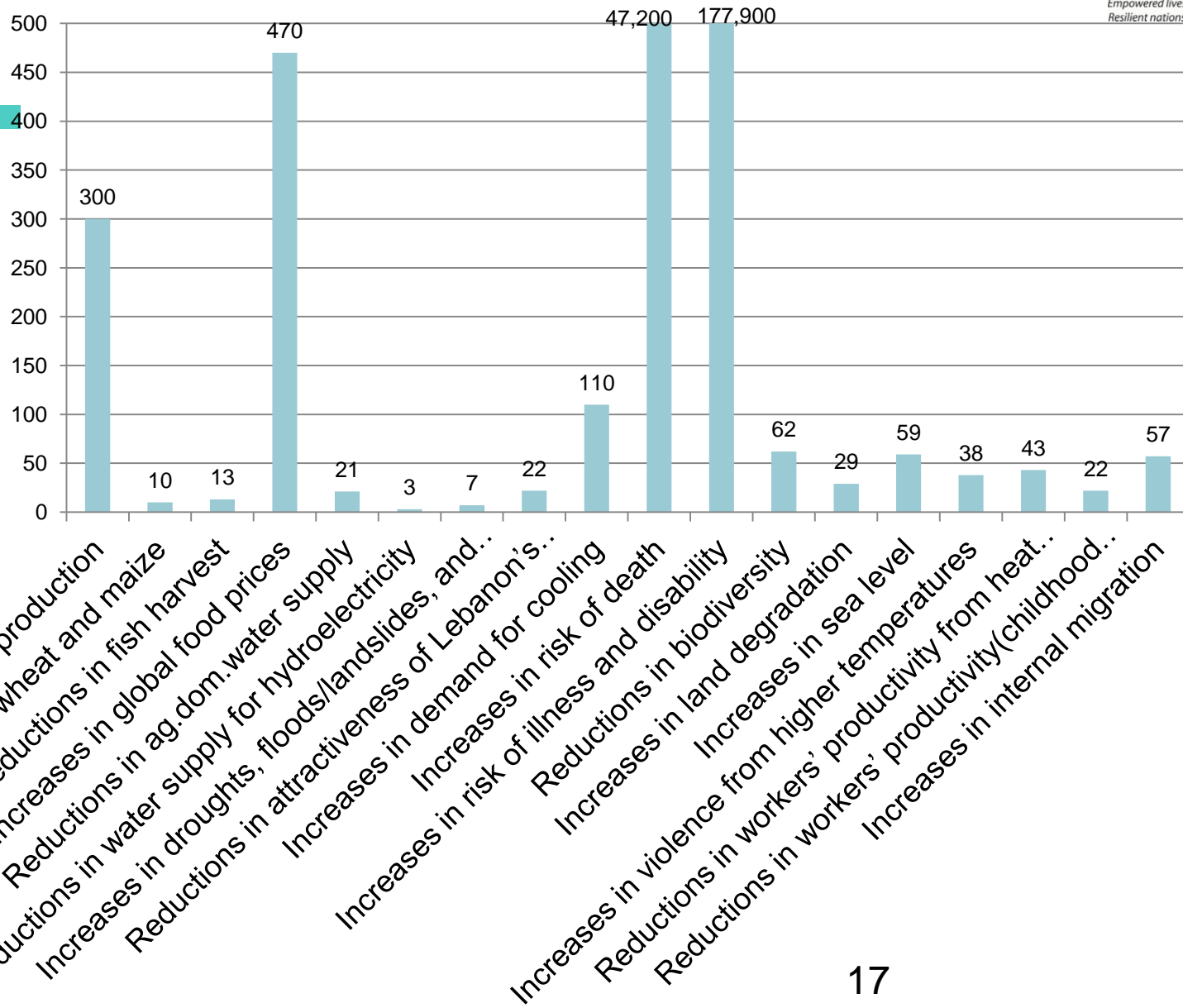
CLIMATE CHANGE



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Resilient nations.



Costs in 2020
(million USD)



Cost on water resources

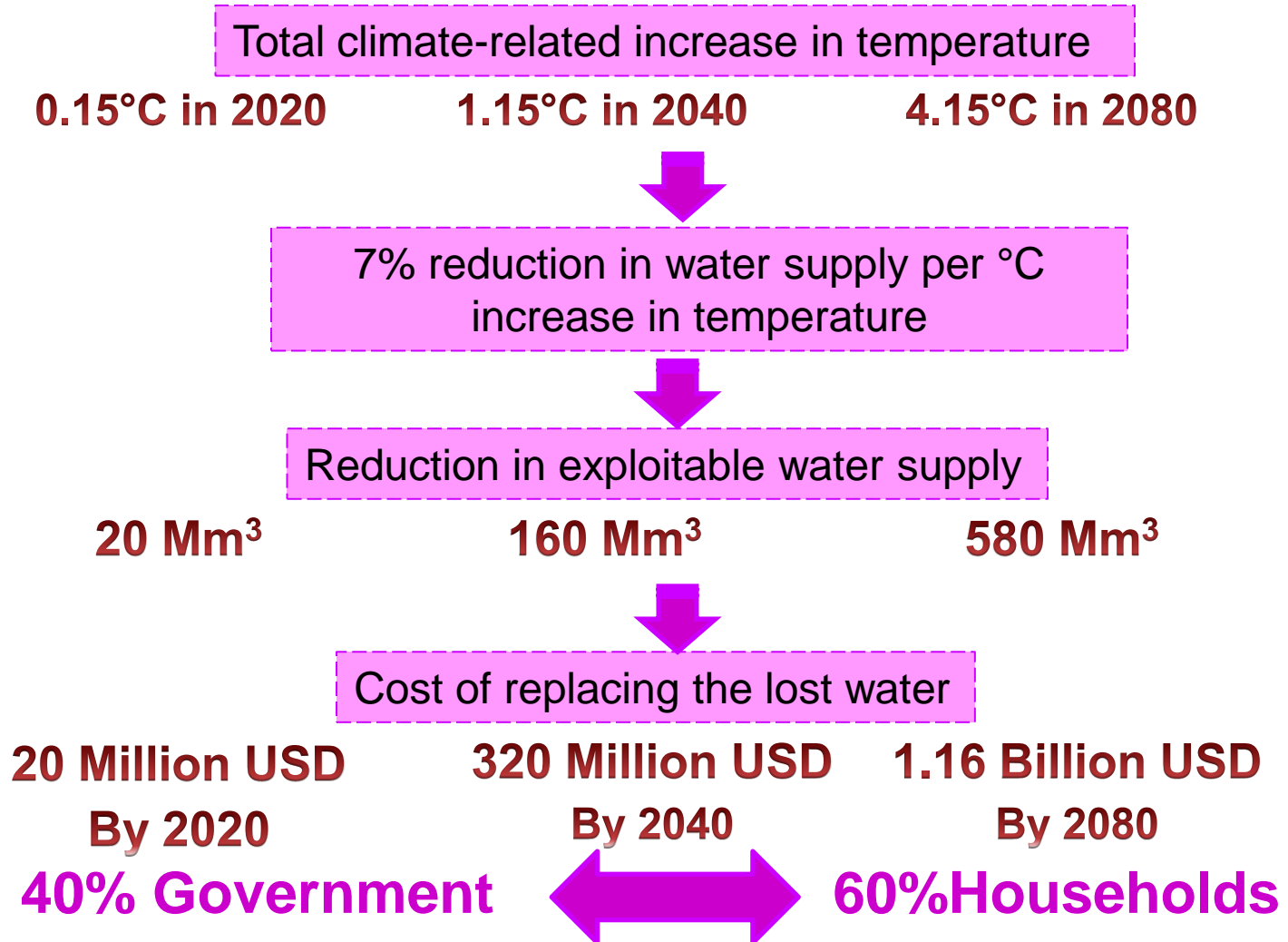
Reduction in agricultural
and domestic/industrial
water supply



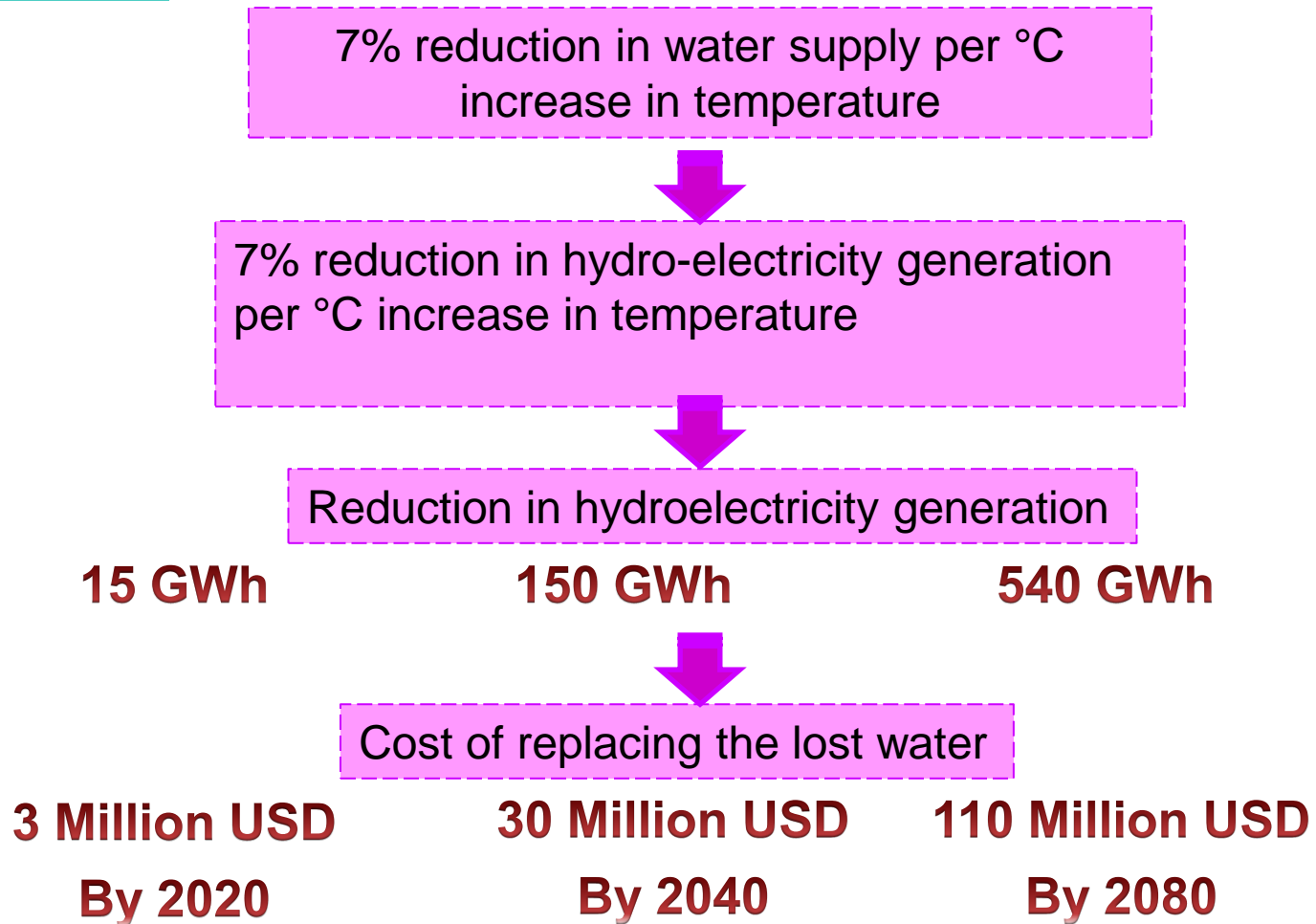
Water supply for
generation of
hydroelectricity

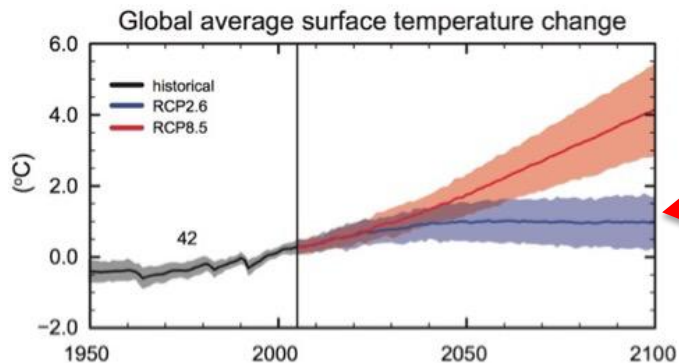


Cost of reduction in water supply



Cost of reduction in hydropower



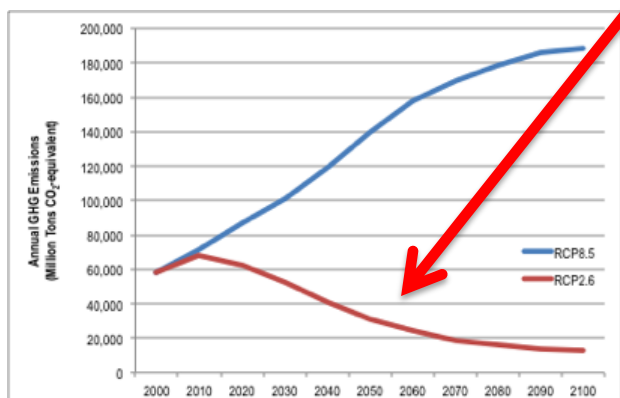


Change

Lower global emissions

Lower costs for Lebanon

28% to 91% savings in 2020 and 2080





**Now we are talking the
same language**



Empowered lives.
Resilient nations.

ECONOMIC COSTS TO LEBANON FROM CLIMATE CHANGE: A FIRST LOOK



2015

An output of
Lebanon's Third National Communication
To the United Nations Framework Convention on Climate Change

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CLIMATE CHANGE

Themes

- National Communications
- Greenhouse Gas Inventory
- Mitigation
- Clean Development Mechanism
- Nationally Appropriate Mitigation Actions
- Vulnerability and Adaptation
- Negotiations

Sectors

- Energy
- Transport
- Agriculture
- Forest and Land Use
- Waste and Wastewater



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Ministry of Environment

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Lebanon's First Biennial Update Report
to the UN Framework Convention on Climate Change

Lebanon's First Biennial Update Report

Revised national circumstances, greenhouse gas inventory of 2011 and mitigation actions for Lebanon.

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gef
ECONOMIC COSTS TO LEBANON FROM CLIMATE CHANGE
A FIRST LOOK

Economic Costs to Lebanon from Climate Change

According to this report, economic damage from climate change on Lebanon could reach more than 80 billion USD in 2040, if the world does not implement quick and serious measures to reduce greenhouse gas emissions. The Lebanese government will bear around 26 billion USD from this economic damage in 2040, according to the assumptions adopted in the study, whereas the Lebanese households will each bear around 60 thousand USD in the same year.

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Thanks!



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