Land and climate
Key messages for students

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Almaty, Kazakhstan
21-22 August 2019
bit.ly/ipcc_outreach_centralasia

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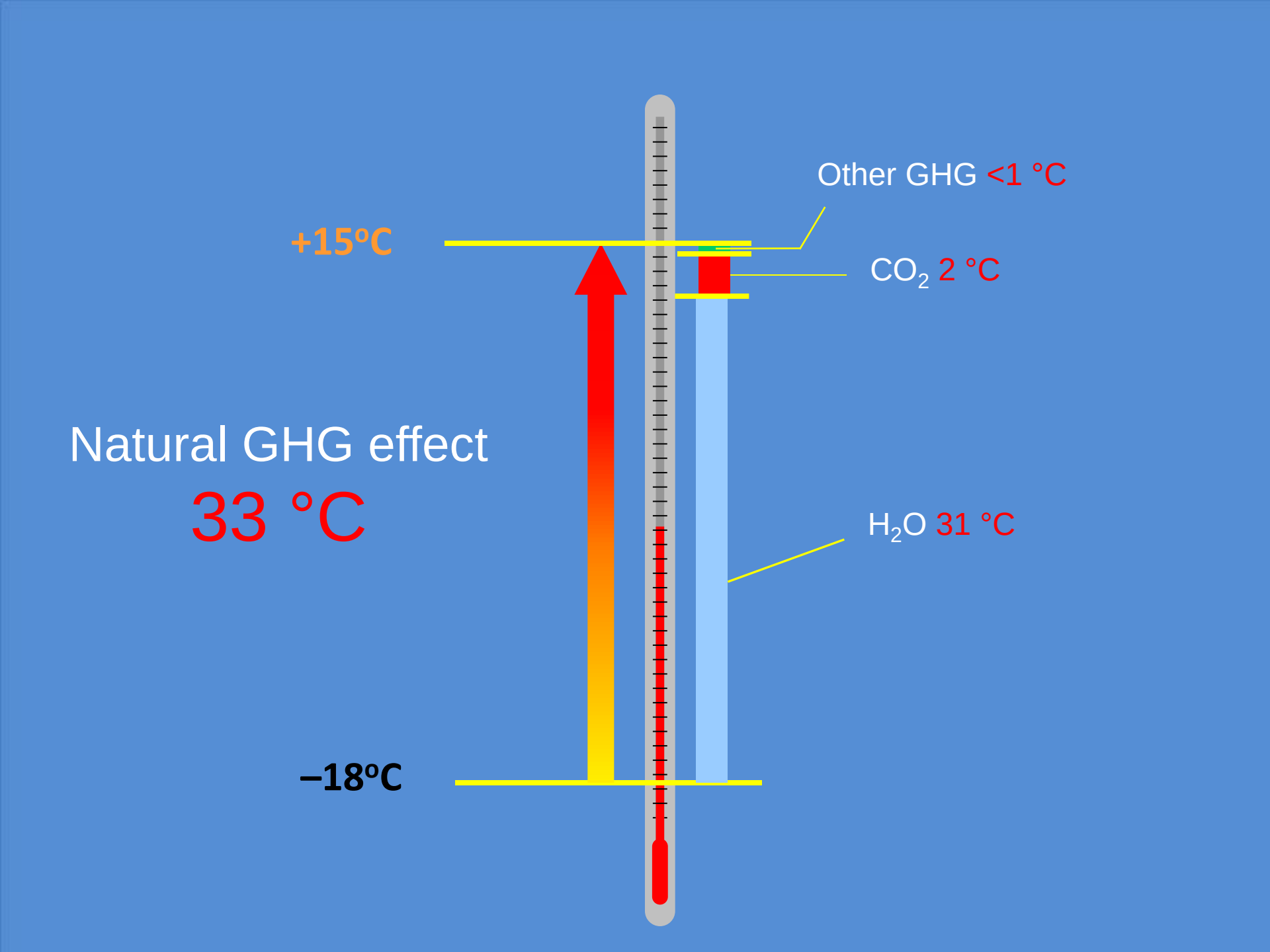
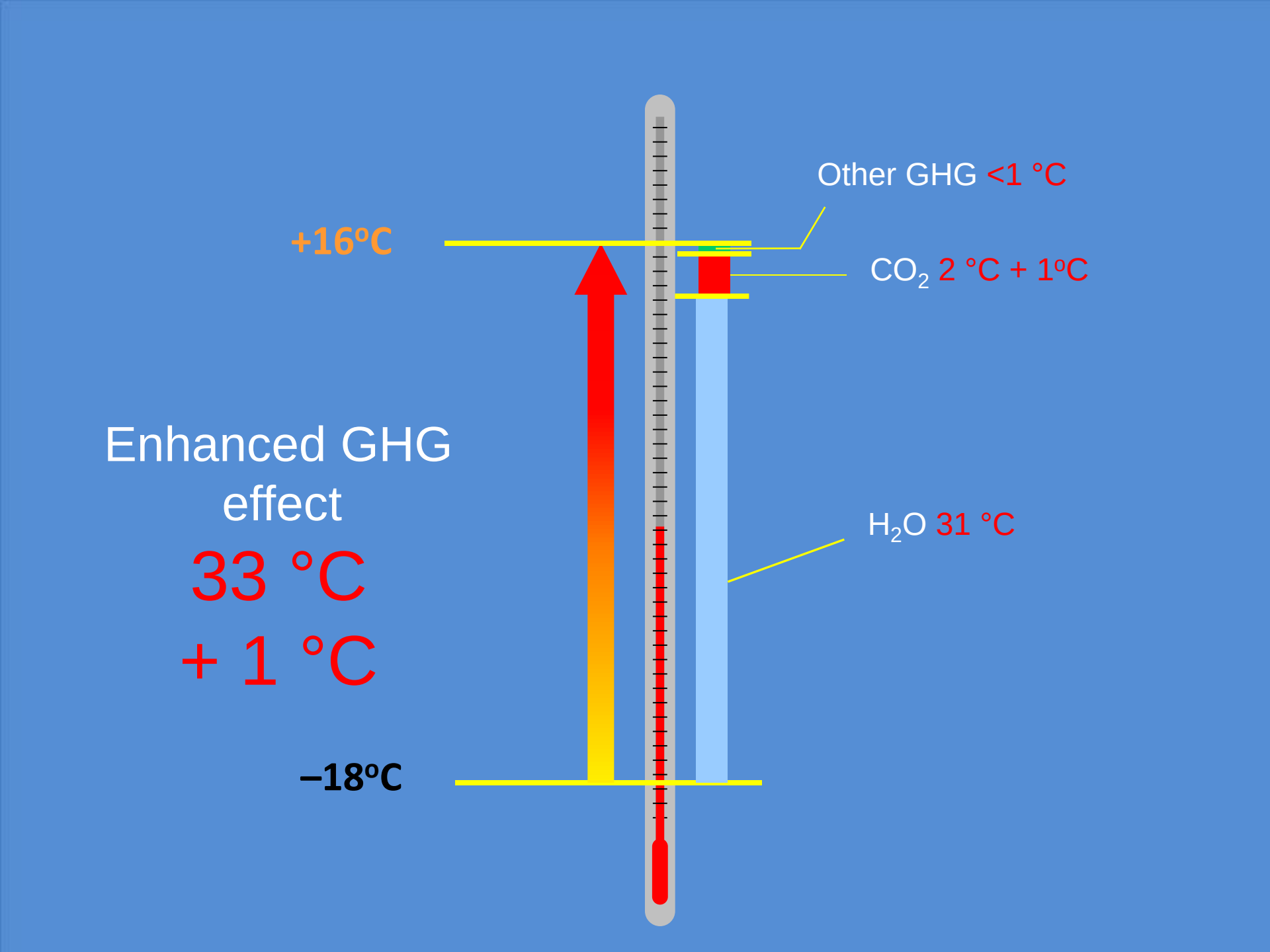
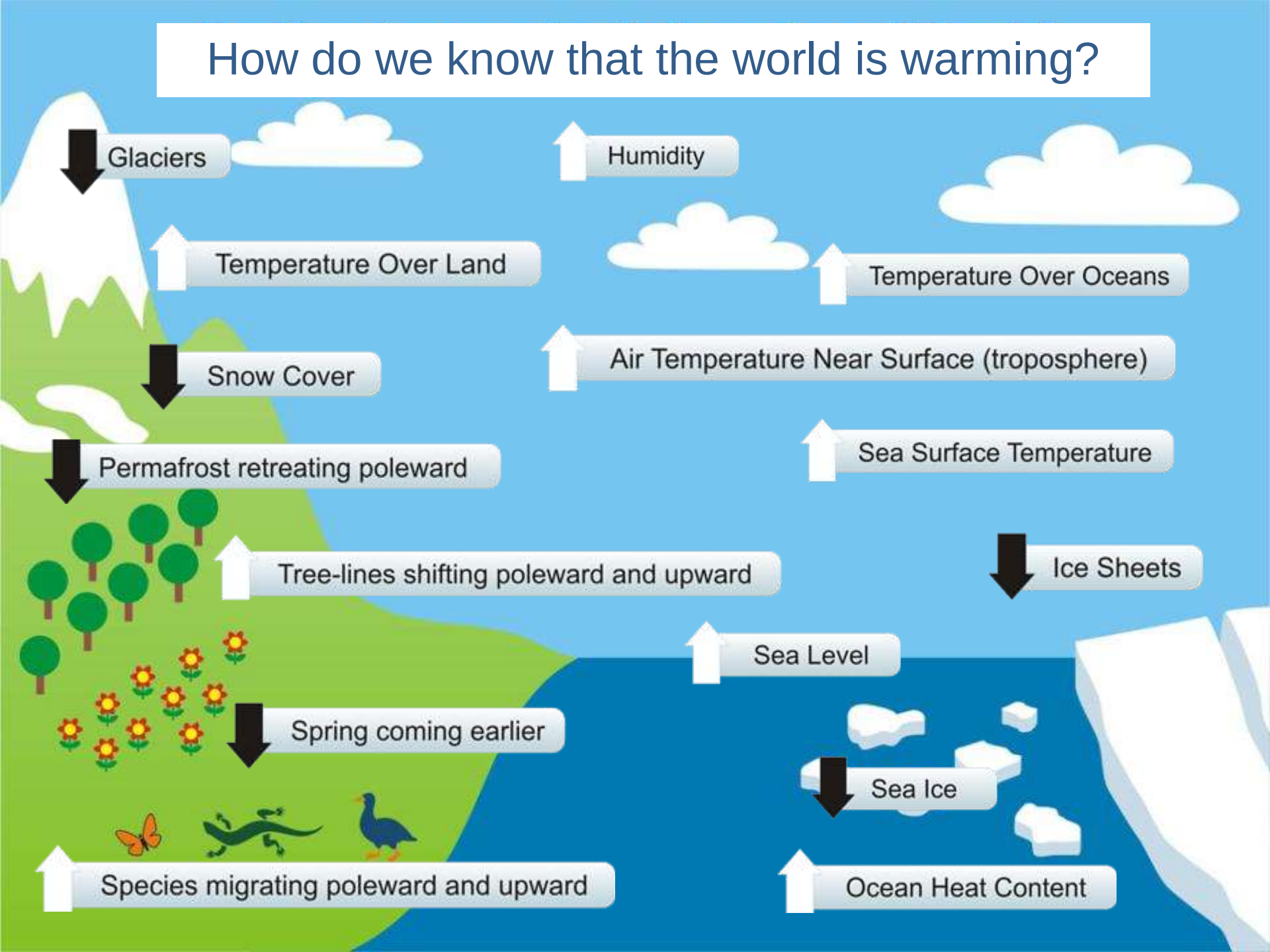

Other GHG <1 °C
+15°C
CO2 2 °C
Natural GHG effect
33 °C
H2O 31 °C
–18°C


Other GHG <1 °C
+16°C
CO2 2 °C + 1°C
Enhanced GHG effect
33 °C
+ 1 °C
H2O 31 °C
–18°C

How do we know that the world is warming?



Climate change is already happening

- **Tropics to the poles**
- **On all continents and in the ocean**
- **Affecting rich and poor countries (but the poor are more vulnerable everywhere)**

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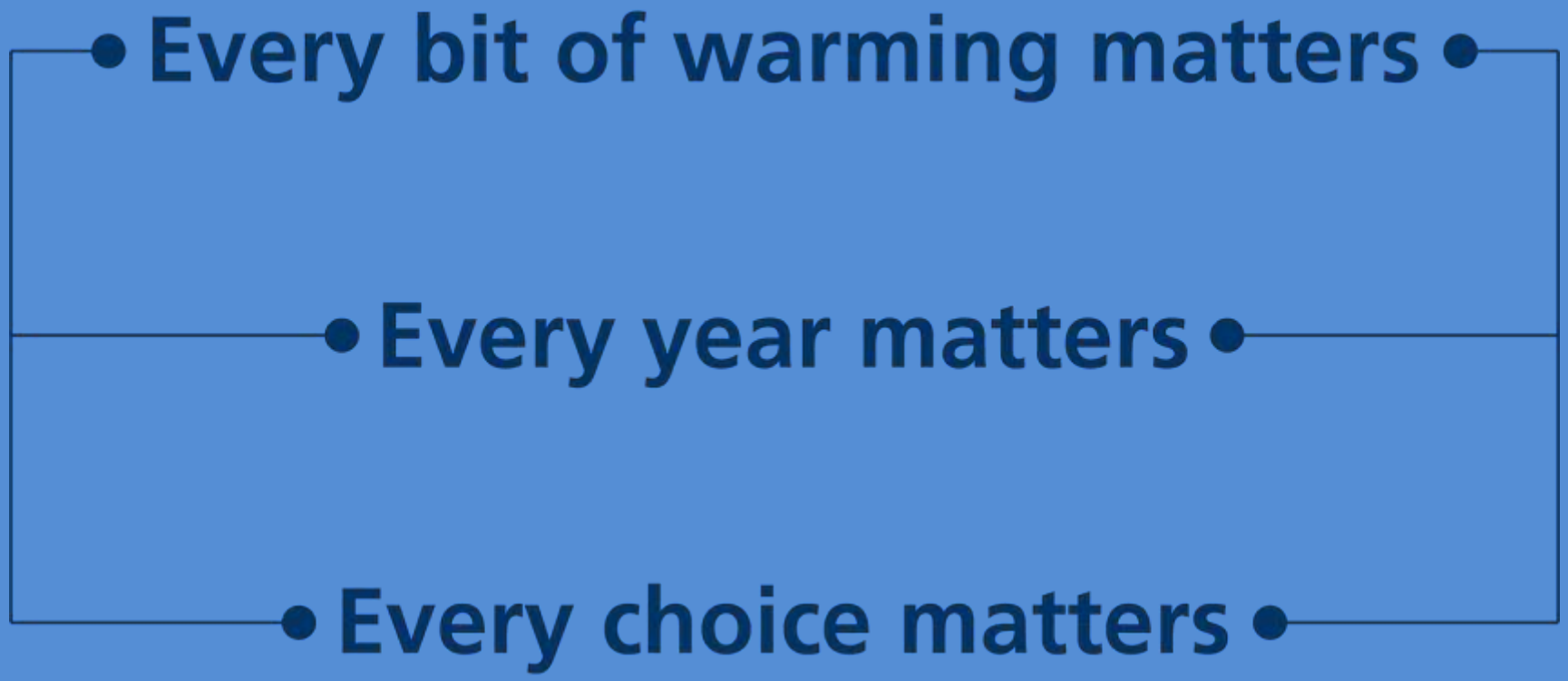
Every bit of warming matters
Every year matters
Every choice matters

What actions can we take?

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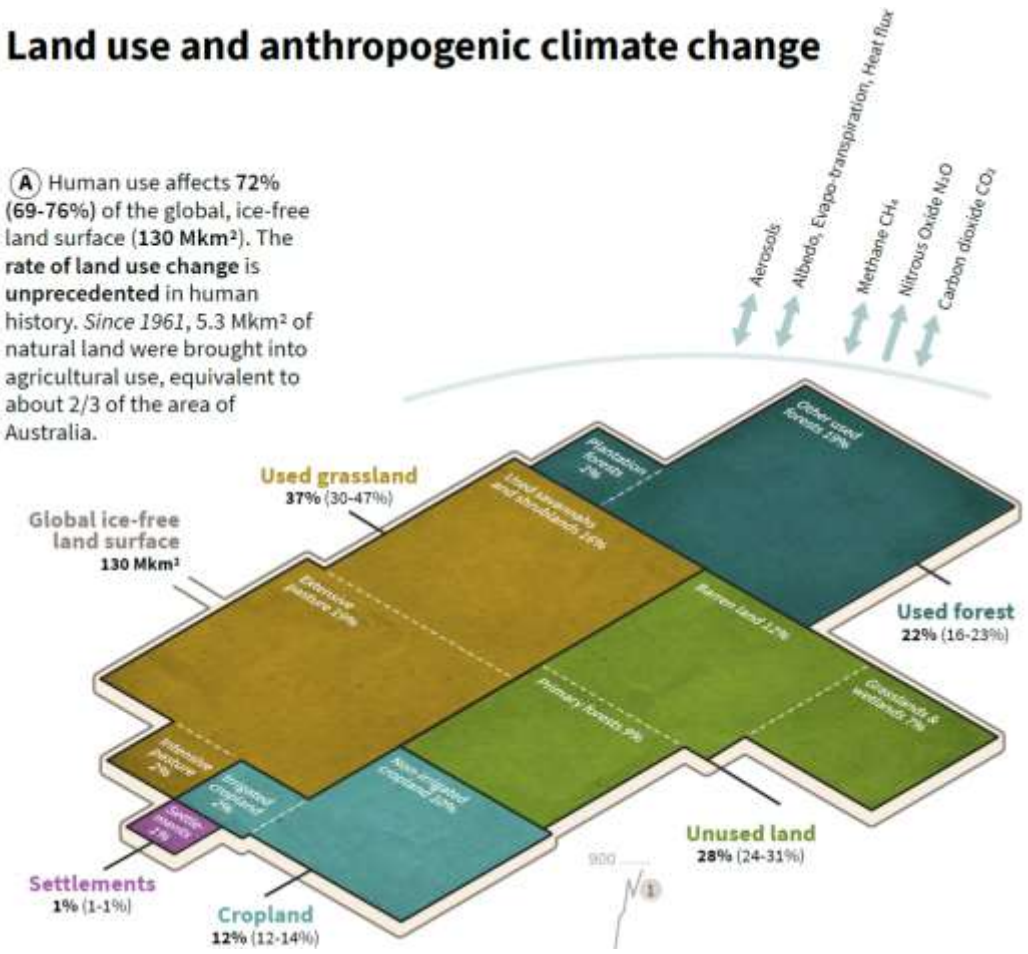
Some solutions come from how we use and manage land

FIGURE 1 Agricultural village in Badakhshan, Afghanistan. (Photo by Matthew Emslie-Smith)

Productive land is a finite and precious resource



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But the atmosphere is changing fast because of all the things people are doing (putting gases into the air)

Energy production remains the primary driver of GHG emissions

35%
Energy Sector

24%
Agriculture, forests and other land uses

21%
Industry

14%
Transport

6.4%
Building Sector

2010 GHG emissions

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Land is where we live

Land is under growing human pressure

Land is a part of the solution

But land can't do it all

Way we produce, transport and eat our food matters; We can reduce emissions from farm to plate and reduce pressure on land.

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Even the good things we do for climate change can sometimes have negative consequences

nature ecology & evolution

BRIEF COMMUNICATION

Wind farms have cascading impacts on ecosystems across trophic levels

Maria Thaker[1,2*], Amod Zambre[1,2,3] and Harshal Bhosale[1]

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Spatial planning that helps us decide what to do where can help minimize negative impacts and increase benefits

Better land management also supports **biodiversity conservation**

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Tackling this challenge requires a **coordinated response.**

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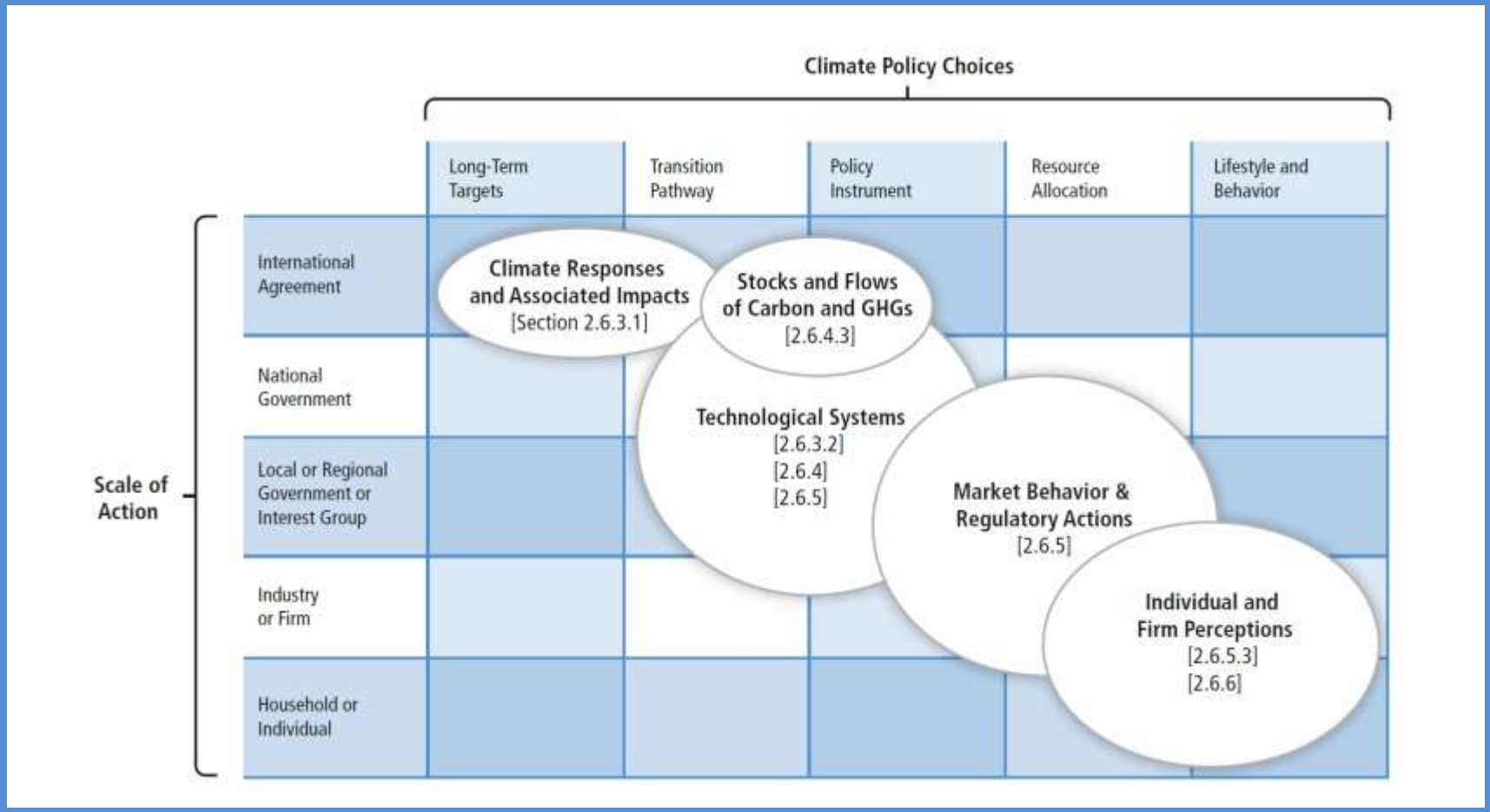
Climate Policy Choices
Long-Term Targets
Transition Pathway
Policy Instrument
Resource Allocation
Lifestyle and Behavior
Scale of Action
International Agreement
National Government
Local or Regional Government or Interest Group
Industry or Firm
Household or Individual
Climate Responses and Associated Impacts [Section 2.6.3.1]
Stocks and Flows of Carbon and GHGs [2.6.4.3]
Technological Systems [2.6.3.2] [2.6.4] [2.6.5]
Market Behavior & Regulatory Actions [2.6.5]
Individual and Firm Perceptions [2.6.5.3] [2.6.6]

Science-policy: Informing magnitude of trade-offs for decision making

Management of dams, barrages and reservoirs for ecological flows down stream

Decision making under uncertainty

Spatial planning for and sharing and land sparing

Location and design of energy mitigation with land implications (solar farms, small dams, wind energy farms) to minimize impacts on biodiversity and pastoralists

How much land to allocate to bioenergy without impacting food security, biodiversity and ecosystem services

Using existing knowledge for near term adaptation

Measuring and monitoring land-use and land-cover change using shared and accessible remotely sensed data for adaptive management and governance

Early warning systems linked to network of sensors for extreme weather and pest outbreaks

Advisories for farmers based on improvements in short term weather forecasting

Cooperation and knowledge transfer for best practices at all levels of governance

Longer term

Early action on mitigation in all sectors (land use, food systems, energy and transportation, consumption) will reduce costs and burden on land and enable longer term ecological restoration with adaptation and mitigation co-benefits

THANK YOU FOR YOUR ATTENTION!

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