

An aerial view of the Earth from space, showing the Western Pacific region. A red heatmap overlay is applied to the landmasses, indicating areas of high temperature anomalies or climate change hotspots. The colors range from dark red to bright orange and yellow, with the most intense areas concentrated in the tropical and subtropical regions. The surrounding oceans are a deep blue, and white clouds are visible over the land and sea.

Climate change and post-COVID19 health security

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Disclosure

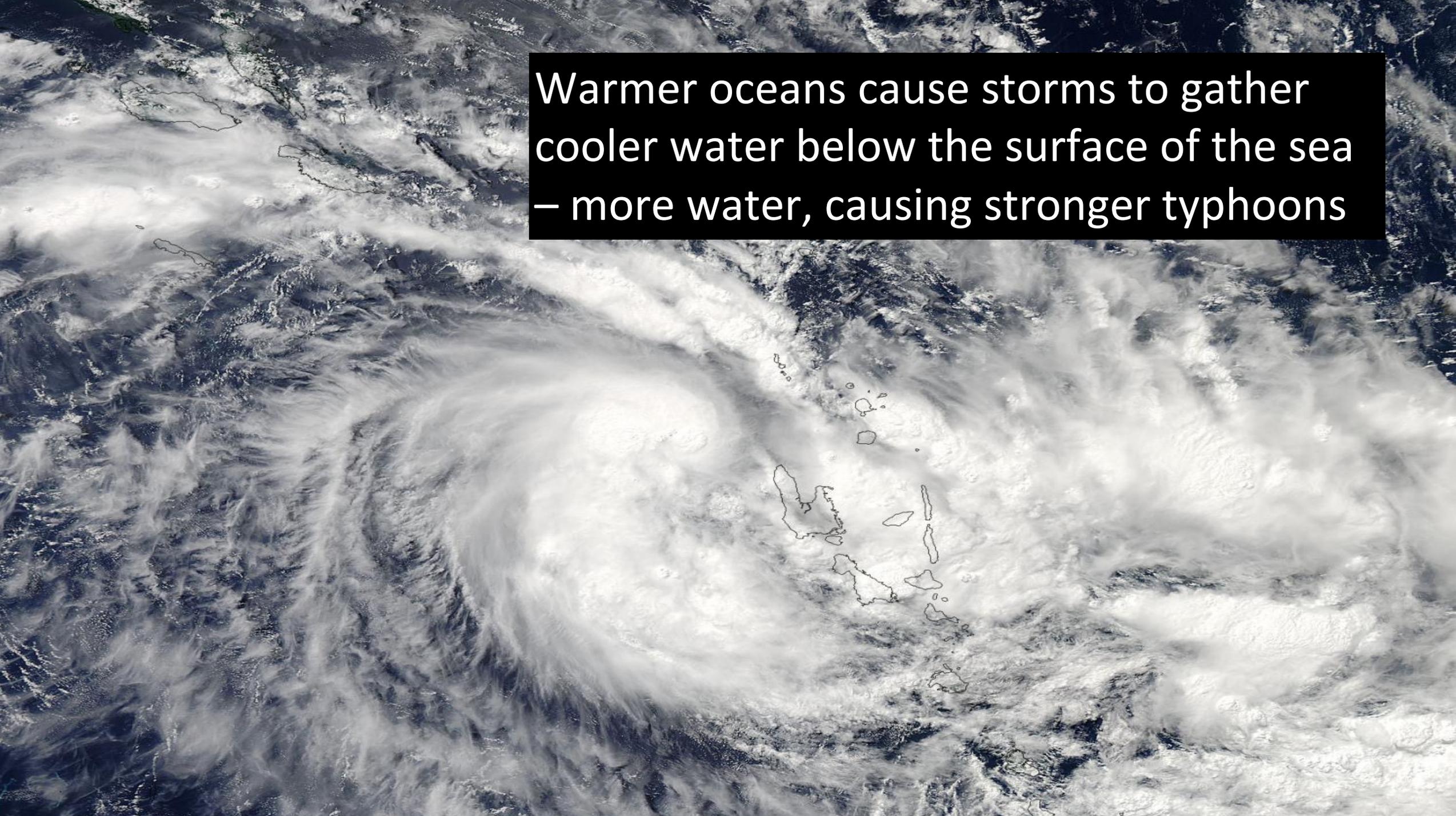
I have no interaction or research with any commercial entity involved in products or services for COVID19 or climate action.



Norway 1998, influenza virus from the 1918 pandemic were recovered from the bodies of 6 dead frozen soldiers.



What else will happen with the melting of icebergs?

A satellite image showing a large, well-defined typhoon with a clear eye and dense, swirling cloud bands. The storm is positioned over the Indonesian archipelago, with the main islands of Sumatra, Java, and Sulawesi visible. The surrounding ocean shows some surface turbulence. A black text box is overlaid on the upper right portion of the image.

Warmer oceans cause storms to gather cooler water below the surface of the sea – more water, causing stronger typhoons







ในความไม่สะอาด
กำลังซ่อมแซม
และปรับปรุงงาน
ตลาดสี่แยกชัย



Extreme heat and drought.



Import-dependence and high prices of food

Escalation of conflict and political unrest

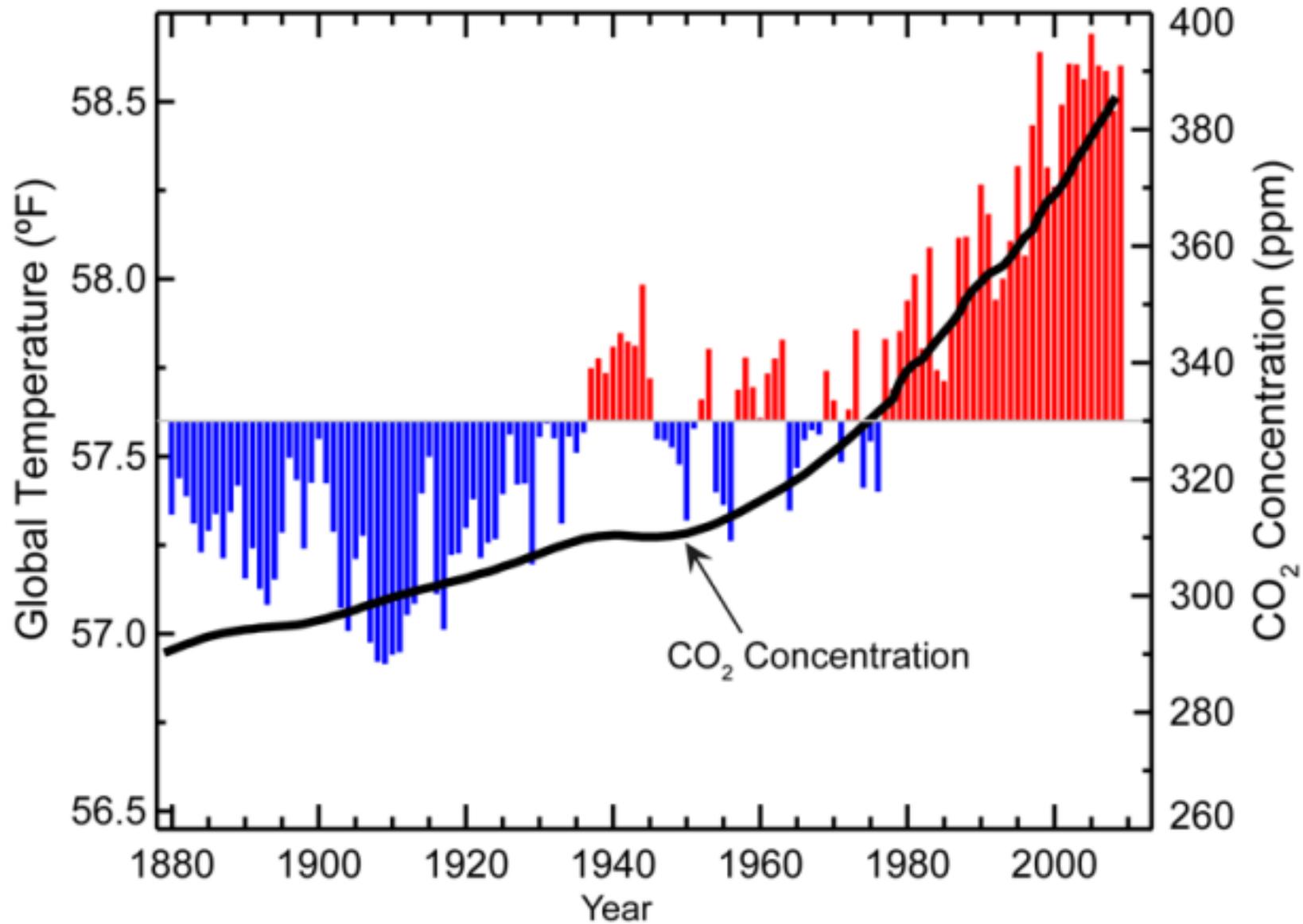




80 %

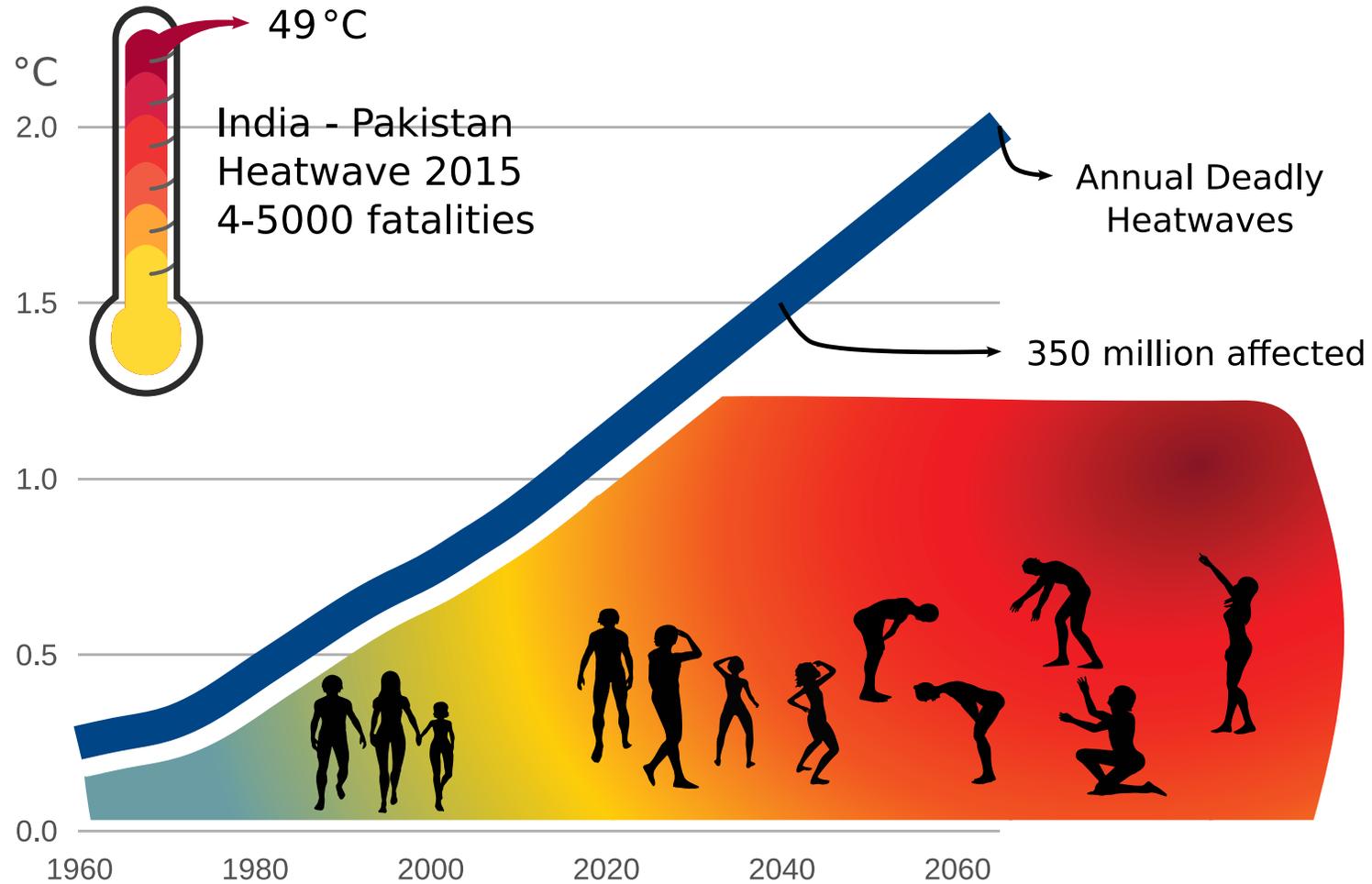
Fossil fuels create green house gases that account for 80% of carbon dioxide leading to global warming and ocean acidification

Global Temperature and Carbon Dioxide



Global Warming is here...

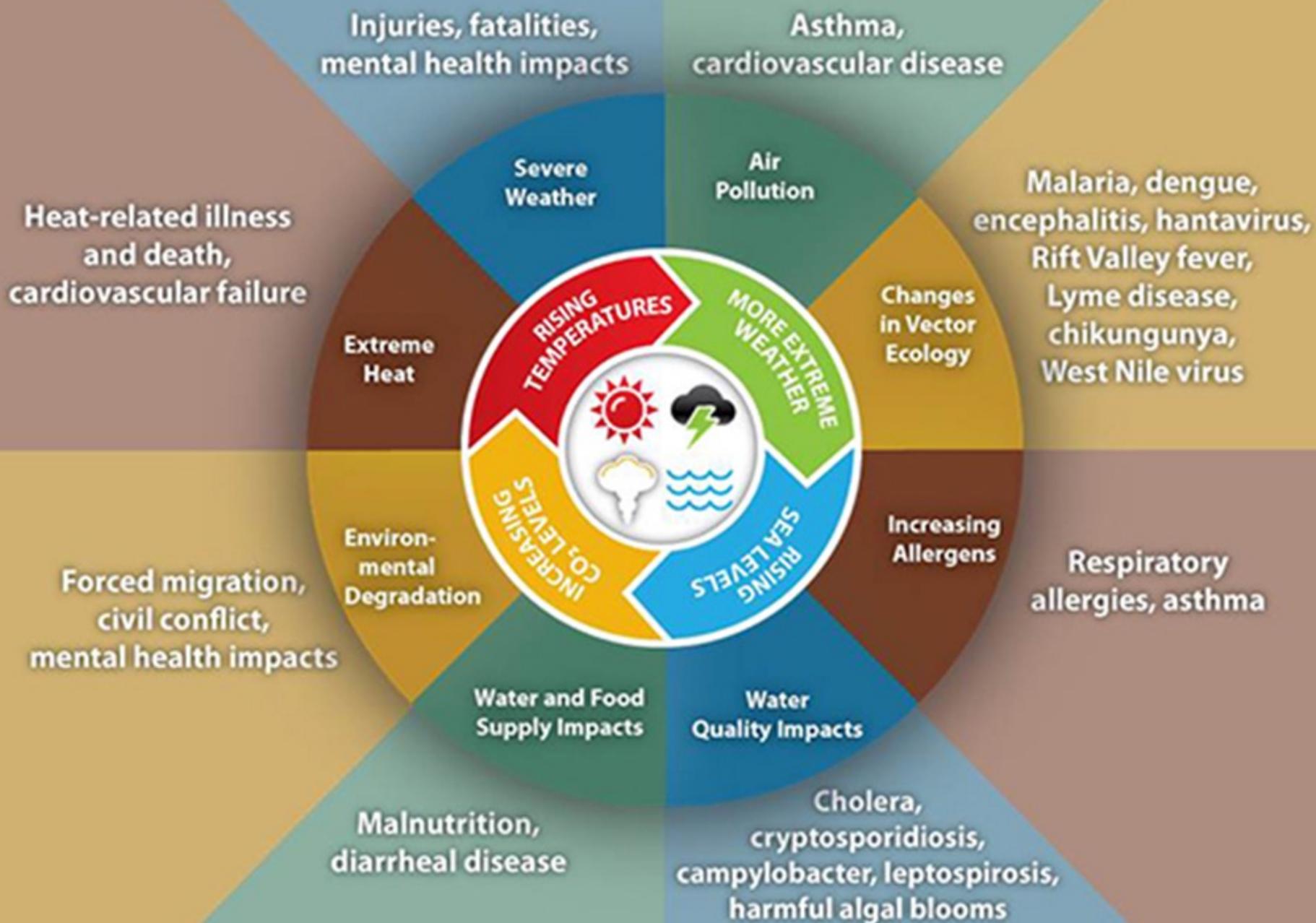
It brings deadly heat...



If things were to continue as they are, temperatures could spike by as much as **4.0 centigrade** – a scenario where only **reptiles** would be able to survive.

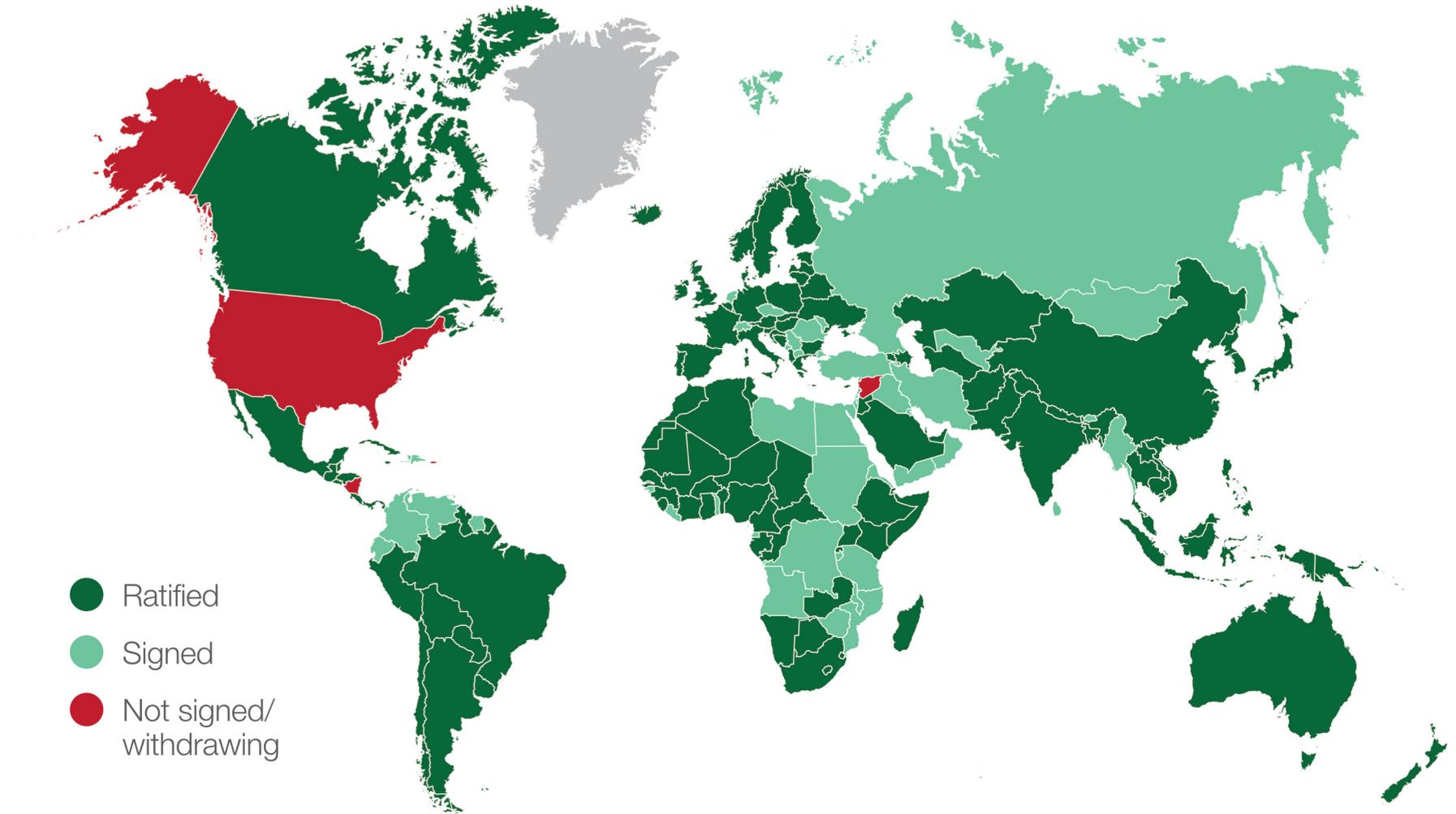


Impact of Climate Change on Human Health



Paris Agreement: Status of Ratification

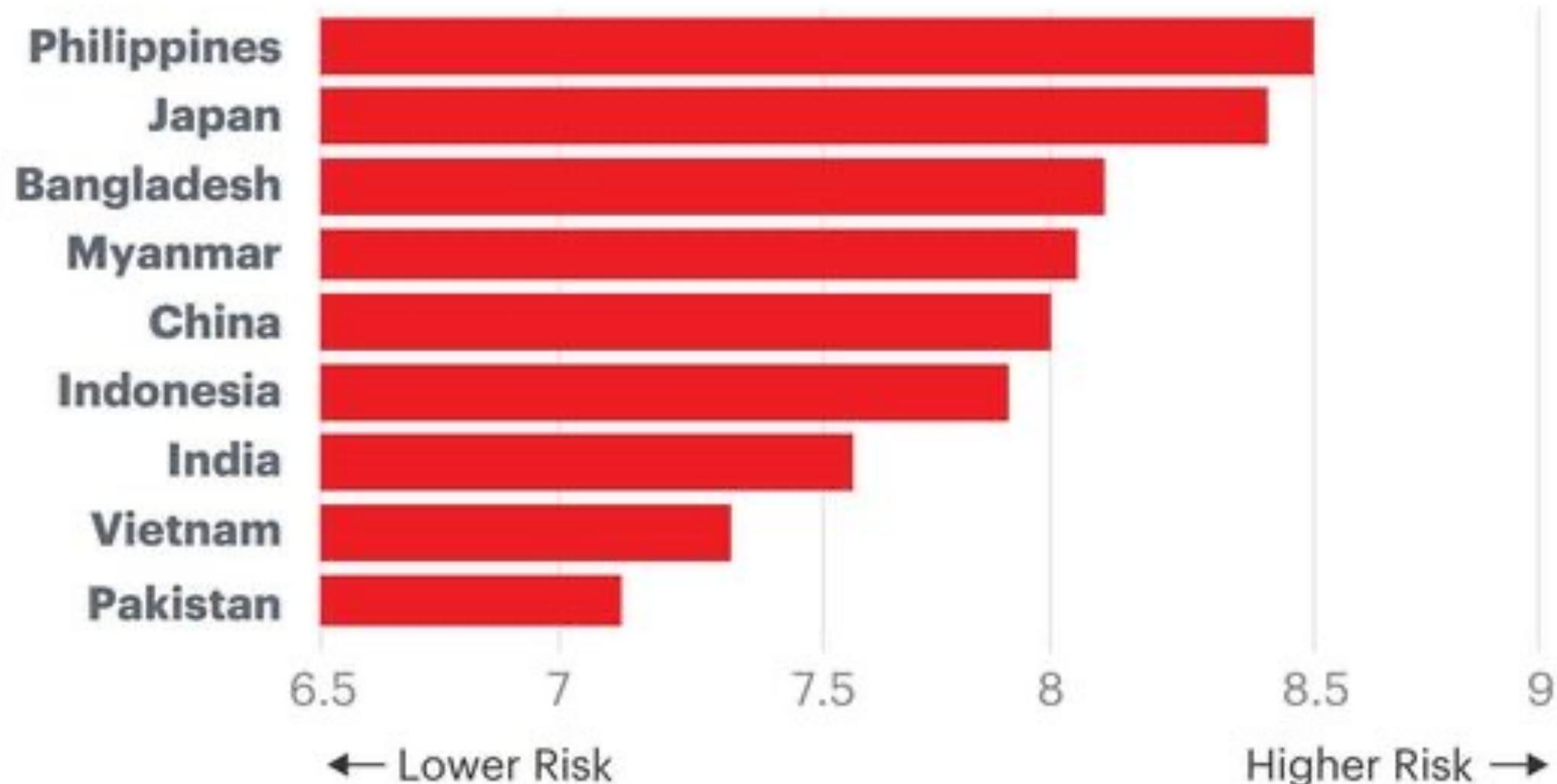
UN Convention on
Climate Change
UNCC, 2015



An aerial photograph of a volcanic eruption. The landscape is covered in dark green and brown terrain, with numerous bright red and orange lava flows spreading across the ground. The sky is blue with scattered white clouds. The text is overlaid in the center-left of the image.

**Climate change:
Strategic considerations
for the Philippines**

OVERALL NATURAL HAZARD SCORE



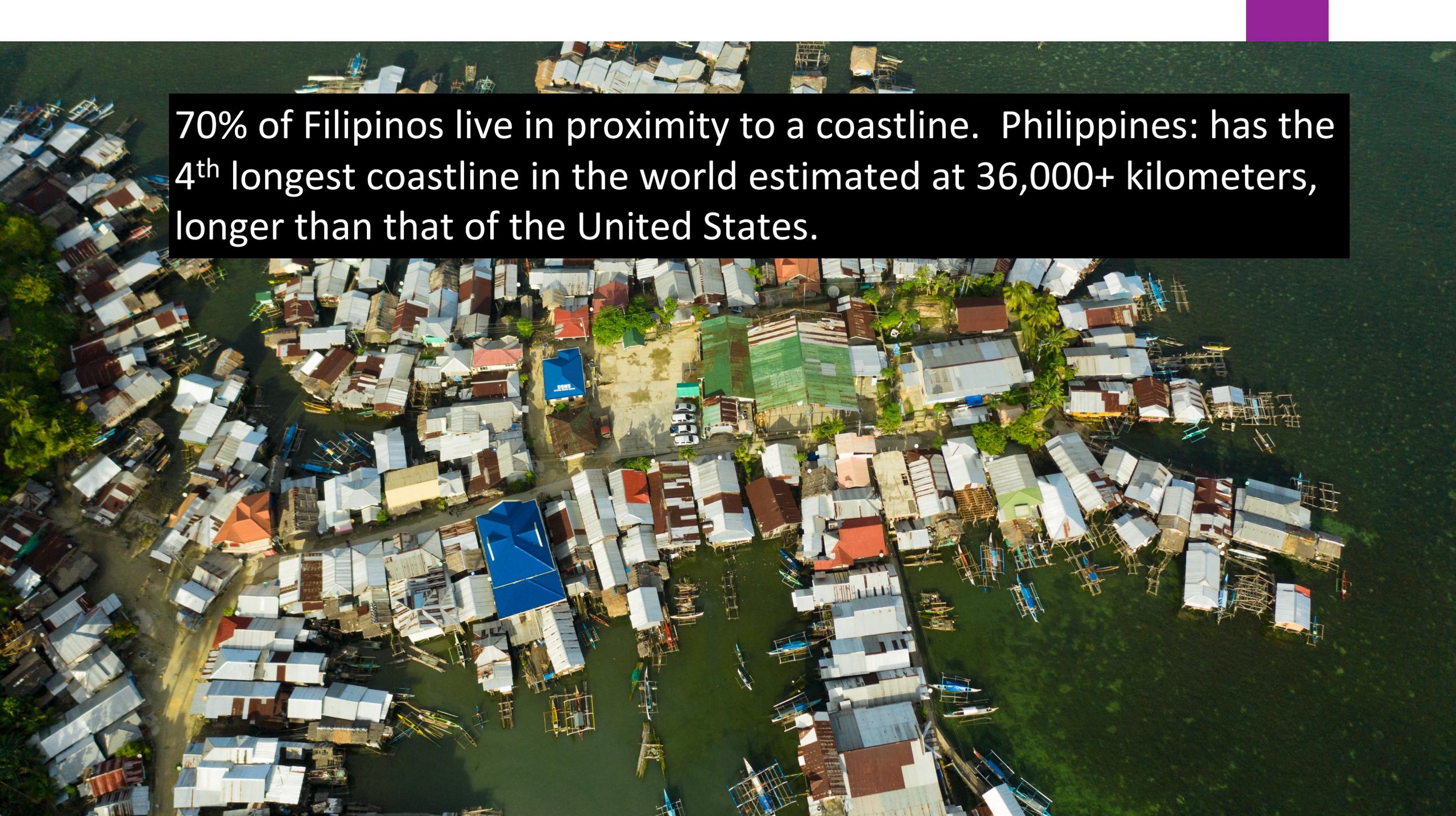
Source: INFORM Global Risk Index 2019; IEP calculations



Storm surges, super typhoons



Sea level rise (SLR), Philippines is 3x higher than global index

An aerial photograph of a coastal village in the Philippines. The houses are densely packed, with many having corrugated metal roofs in various colors like silver, brown, and blue. The village is situated along a dark green coastline, with numerous small boats and fishing structures visible in the water. A central area shows a dirt road and a few parked cars. The overall scene depicts a typical coastal settlement.

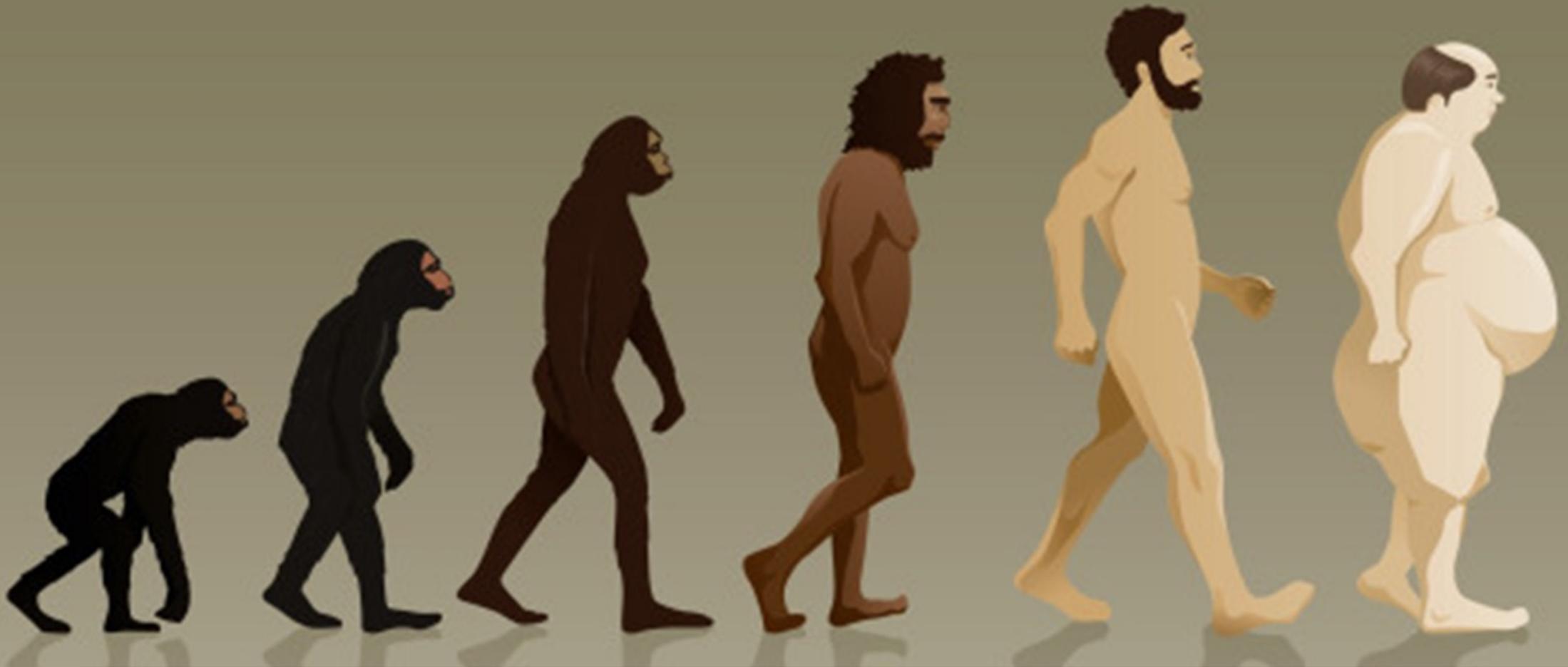
70% of Filipinos live in proximity to a coastline. Philippines: has the 4th longest coastline in the world estimated at 36,000+ kilometers, longer than that of the United States.

Rapid and unplanned urbanization at 50%.
1/6 Filipinos live in informal settlements and slums.





The strain of SARSCOV 2 that spread in March 2020 was from India through the Dream Princess Liner that docked in Yokohama, Japan. Filipino seafarers, the largest group in the world.



Co-morbidities and infections: The shape of things to come.
25% hypertension increasing diabetes and other non-communicable conditions that are untreated.



People's Survival Fund (RA 10174, 2012) – allocates P 1 B per year for climate action. To date the funds available are at **P 14.5 B**. Expenditure is about **P 150 M**. Project sites: Lanuza (Surigao), Siargao, Camotes (Cebu), Gerona (Tarlac), Sarangani, Kitcharo-kitcharo (Agusan del Norte).

Total losses from climate-linked disasters 2010-2020 = **P 515 B**

An aerial photograph of a volcanic eruption. The landscape is covered in dark green and brown terrain, with numerous bright red and orange lava flows and plumes of smoke rising from various points. The sky is filled with white and grey clouds. The text is overlaid in the center of the image.

**The future of health security
in the Philippines: Lessons from COVID19**



Global public **health security** is defined as the activities required, both proactive and reactive, to minimize the danger and impact of **acute public health events** that endanger people's health across geographical regions and international boundaries.



Slow onset events include increasing temperature, desertification, loss of biodiversity, land and forest degradation, glacial retreat, sea level rise, ocean acidification, and salinization.



Public health investment requirements

Surveillance

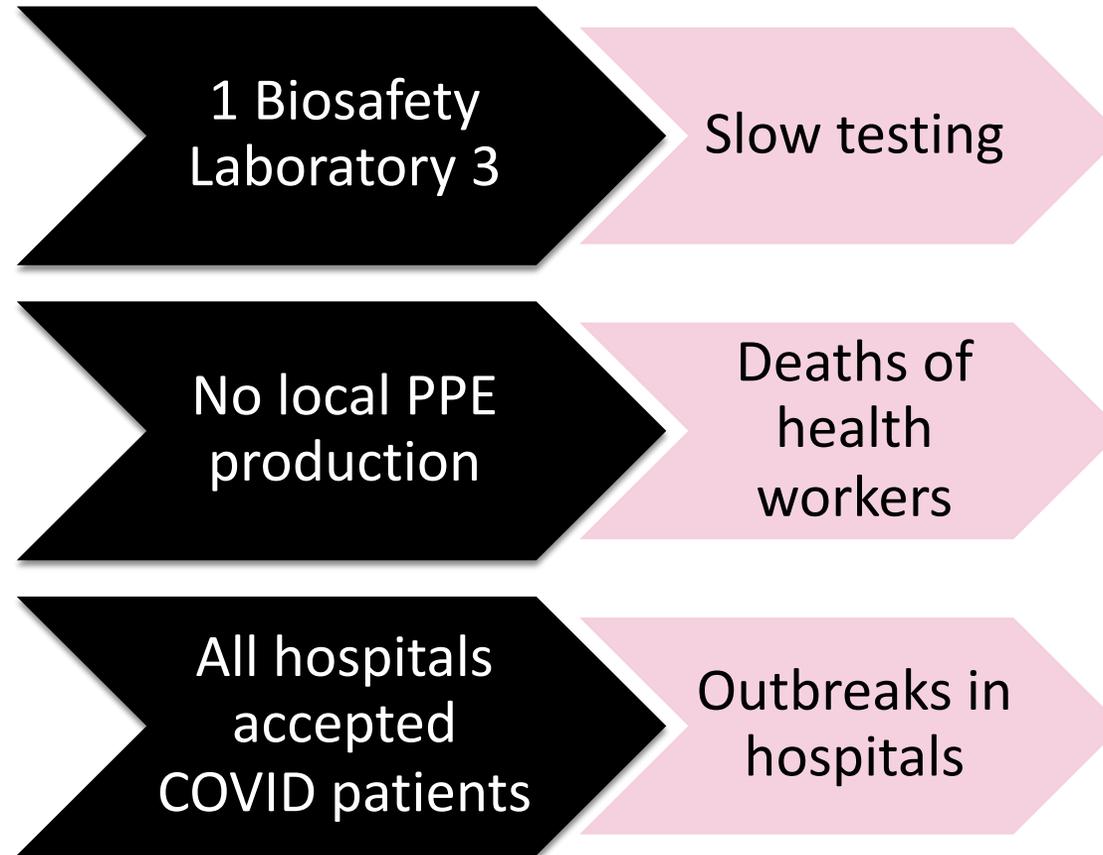
Laboratories

Vaccine production

Workforce development

Emergency management

Early constraints

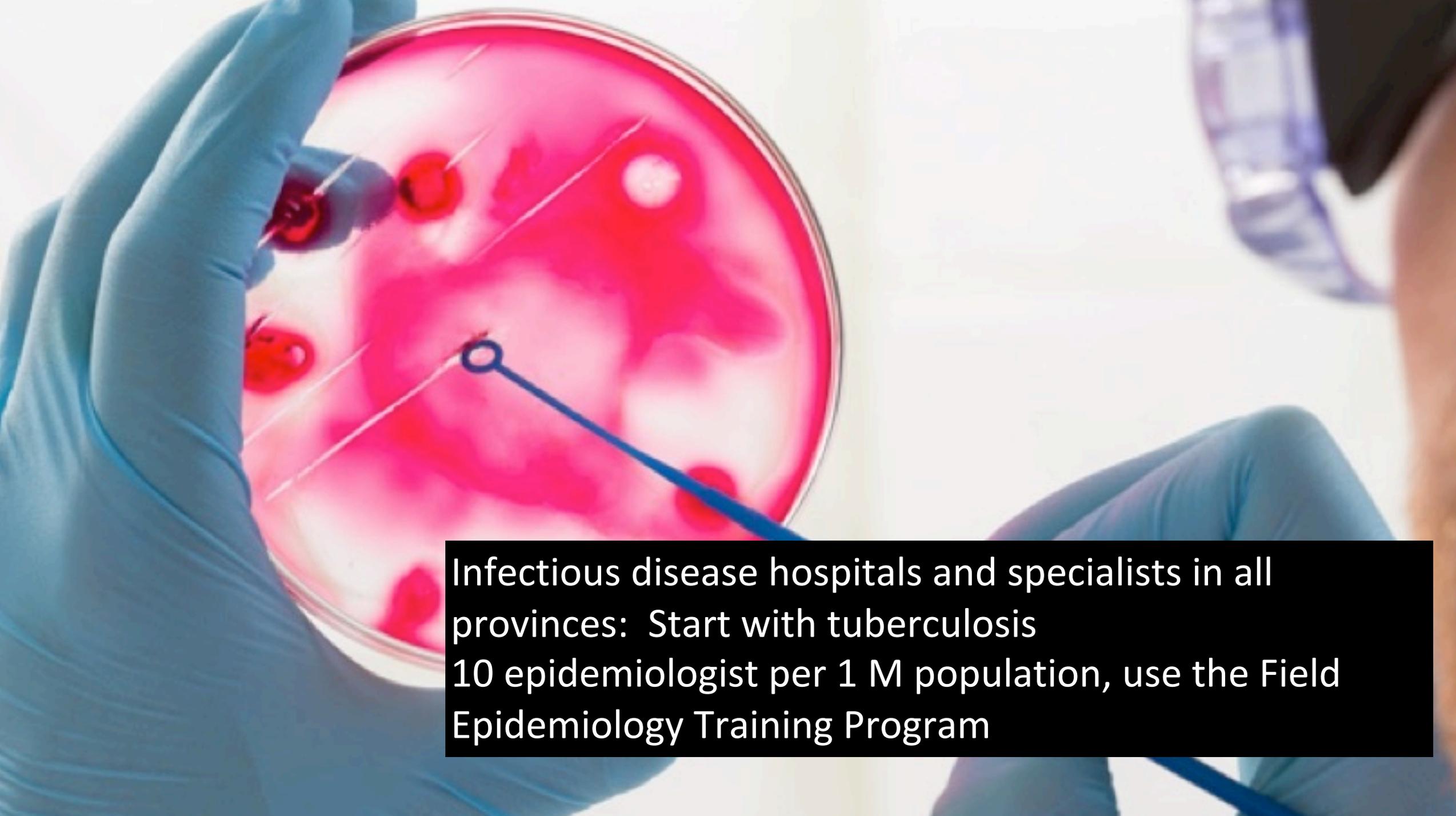




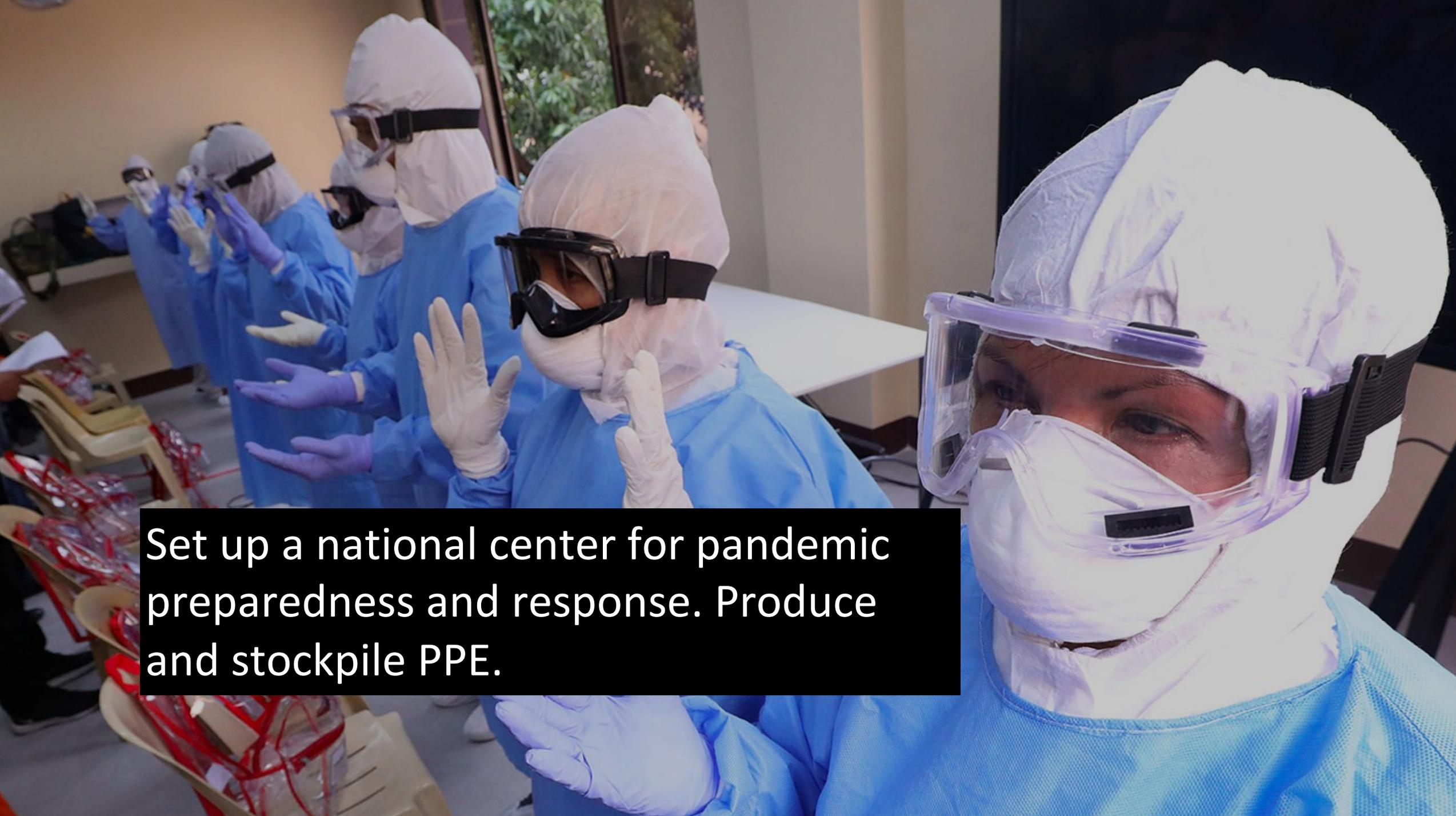
Global proliferation of high containment laboratories

Biosafety Level 3 Laboratories post 9/11

China-30	Italy-4	Sweden-40
Taiwan-20	Japan-200	Switzerland-26
Finland-13	Malaysia-3	Thailand-23
France-12	Mexico-4	UK-600
Germany-97	Pakistan-2	USA-1,643
India-6	Philippines-1	Viet Nam-2
Indonesia-2	Russia-84	
Ireland-31	Singapore-10	



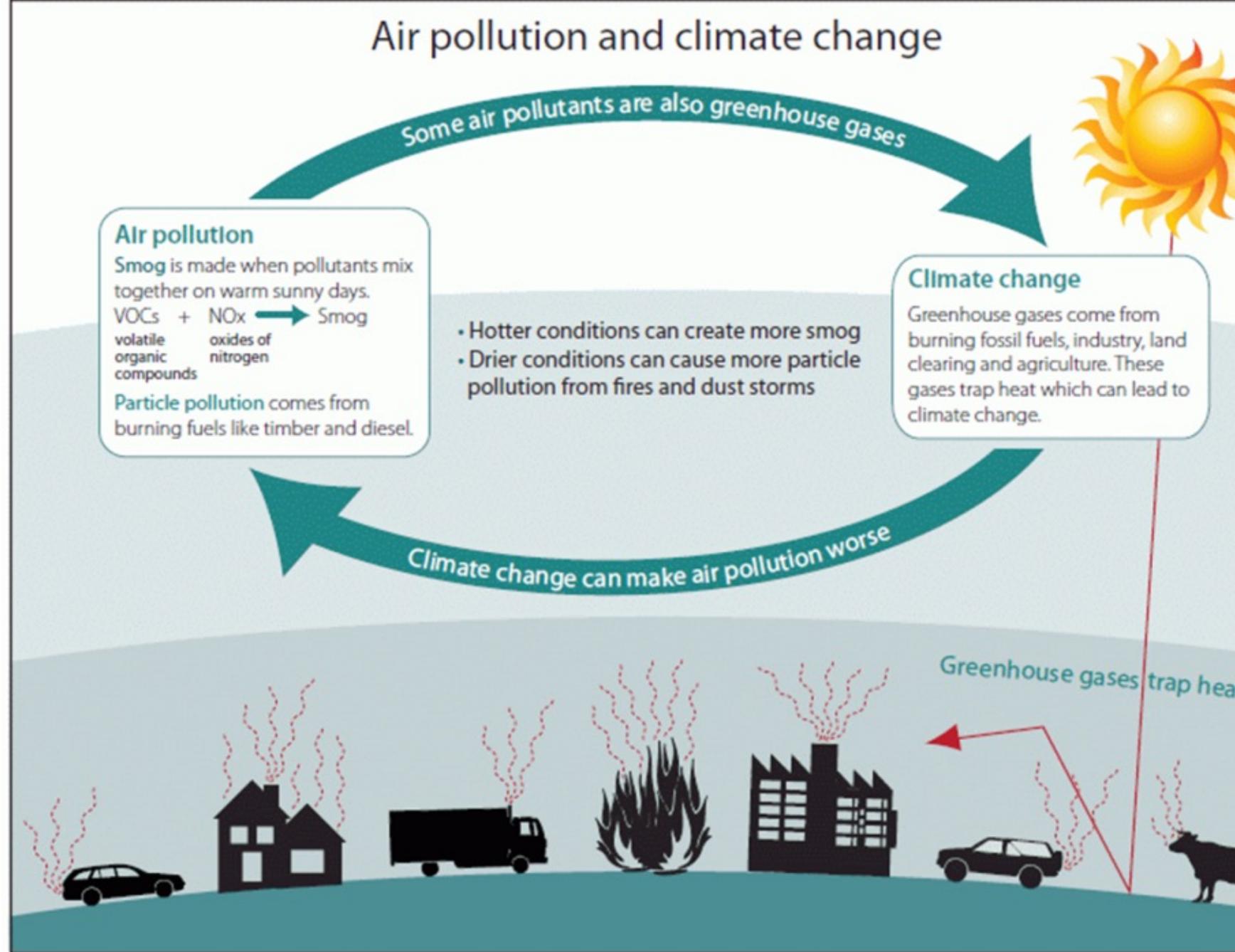
Infectious disease hospitals and specialists in all provinces: Start with tuberculosis
10 epidemiologist per 1 M population, use the Field Epidemiology Training Program



Set up a national center for pandemic preparedness and response. Produce and stockpile PPE.

Poor air quality increases risk for respiratory and cardiovascular disease

Research by EPA and others has found that **exposure to increased concentrations of PM_{2.5} over a few hours to weeks can trigger cardiovascular disease-related heart attacks and death.** Longer-term exposure can lead to increased risk of cardiovascular mortality and decreases in life expectancy.



How to wear a mask properly



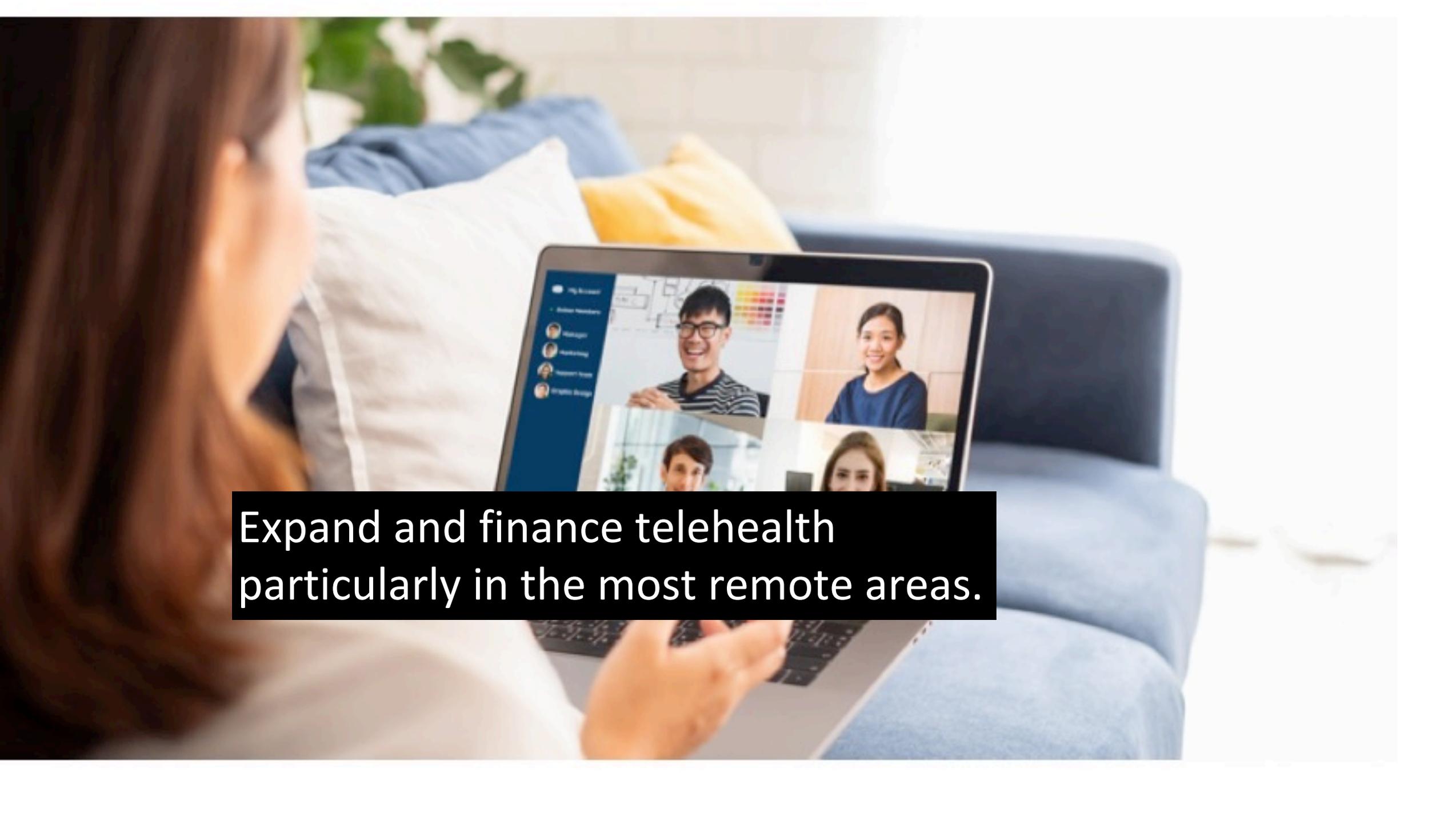
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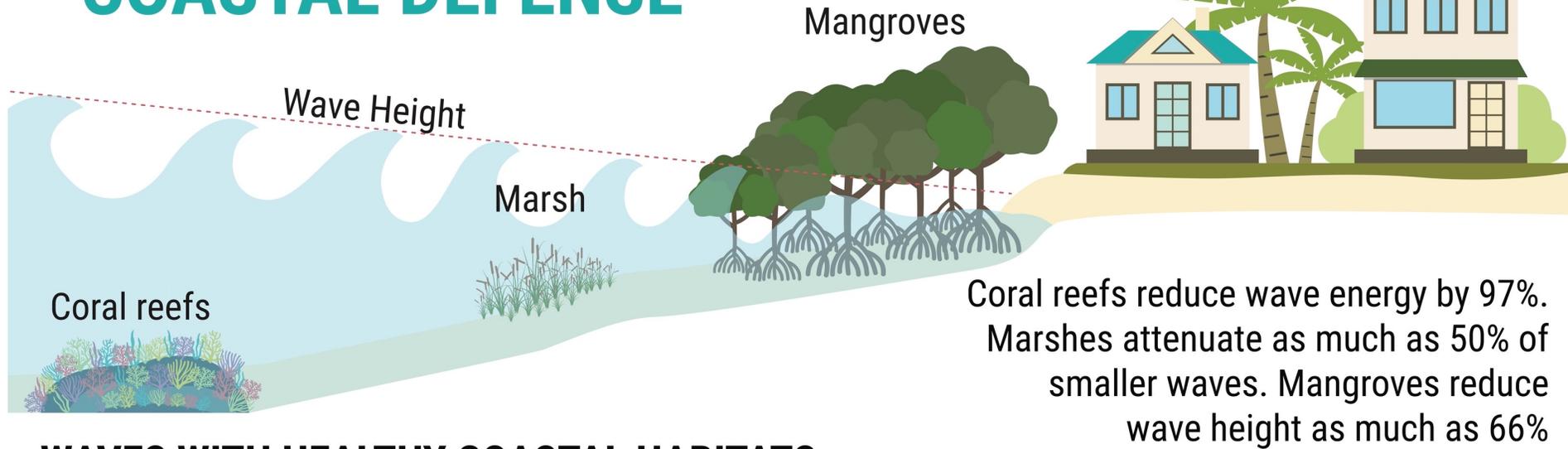


Expand and finance telehealth particularly in the most remote areas.

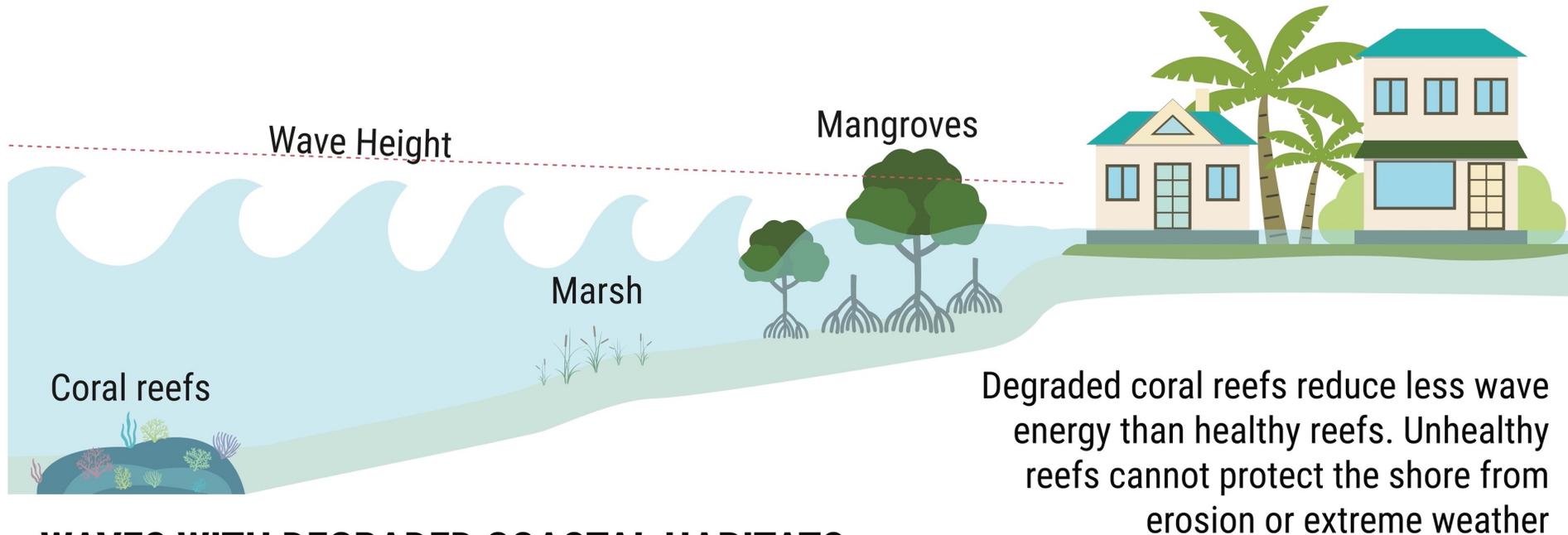
Can the Philippines host an international quarantine facility for sea vessels?



COASTAL DEFENSE



WAVES WITH HEALTHY COASTAL HABITATS



WAVES WITH DEGRADED COASTAL HABITATS

Health center elevated with rain water harvesting





delab



labi

EDG Architects

Permanent evacuation center with fish pond, common cooking area and vertical garden - aquaponics

Priorities of the National Panel of Technical Experts Climate Change Commission

Flooding

Increase in frequency and severity of tropical cyclones

Extreme rainfall

Wind patterns

Coastal erosion

Biodiversity loss

Sea level rise

Extreme drought

Climate influenced diseases

Temperature increases



The Boiling Frog Syndrome

