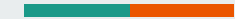




# The Roles of University and Research Agency in Managing Ecological Risks and Natural Disasters

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Globally, in the past 10 years,  
**83%** of all disasters were caused  
by **extreme weather** and **climate  
related** events



An aerial view of flood in Germany in July 2021 resulted in at least **184 fatalities** with estimated **economic losses of USD 10 billion**  
(photo from Christoph Reichwein/DPA/AFP)



**100 disasters** occurred during  
**the first 6 months**  
of the COVID-19 pandemic



More than **50 million people**  
have been affected



**99%** of people affected were  
impacted by **extreme weather  
and climate** related disasters

Throughout 2020, BNPB data showed that **99% of disasters** in Indonesia were **hydrometeorological**

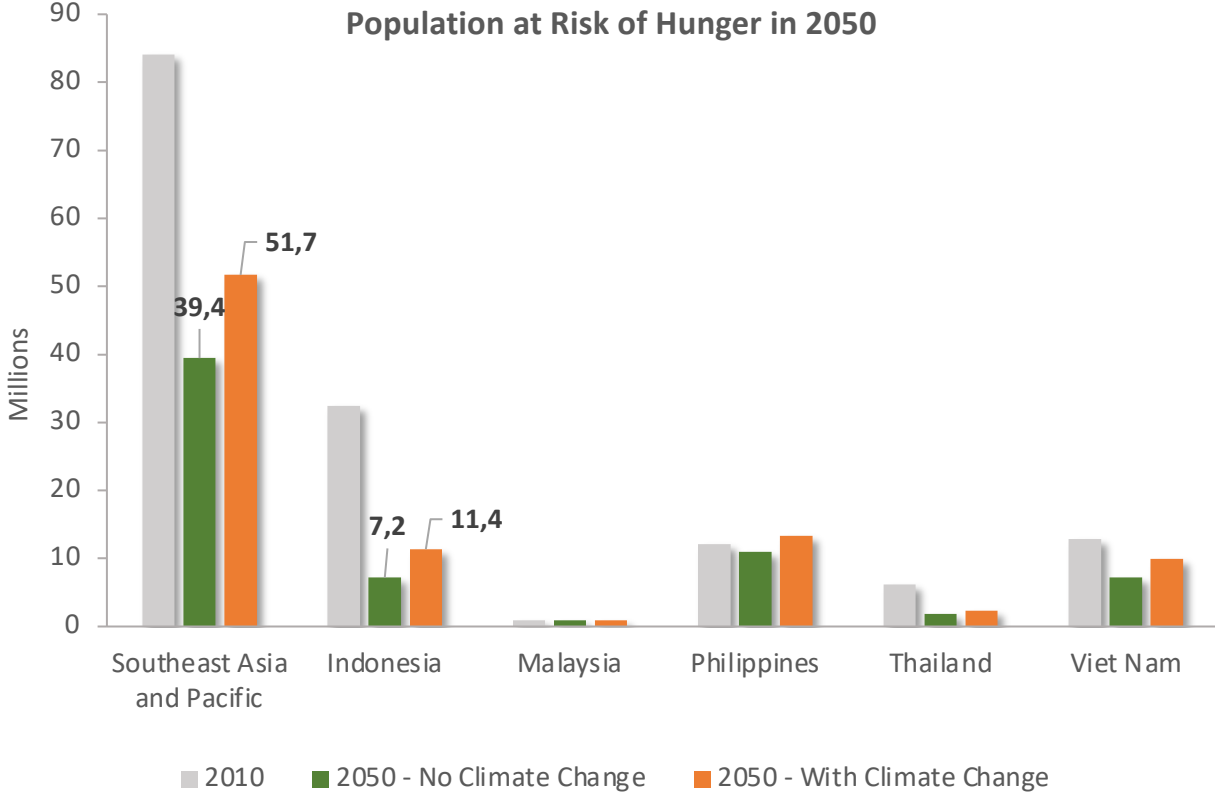
- Ministry of Finance estimated that **economic losses** due to disasters reached an average of IDR **22.8 trillion per year**.
- While **the death toll** due to natural disasters in the last 10 years reached **1,183 people**.



An aerial view of the aftermath of **tropical cyclone Seroja** in East Timor in April 2021 that **killed at least 165 people**. This disaster also caused **economic losses totaling of IDR 1.3 trillion**.  
(photo from Aditya/Antara)

# Climate change also poses major threat to our food security

- Climate variability, extreme weather, and rising temperature can **reduce crops yields by 5 – 10%**.
- By 2050, IFPRI estimated that climate change causing an additional of **12 million people at risk of hunger** in Southeast Asia.



Source: International Food Policy Research Institute (IFPRI). 2019. IMPACT Projections of Food Production, Consumption, and Hunger to 2050

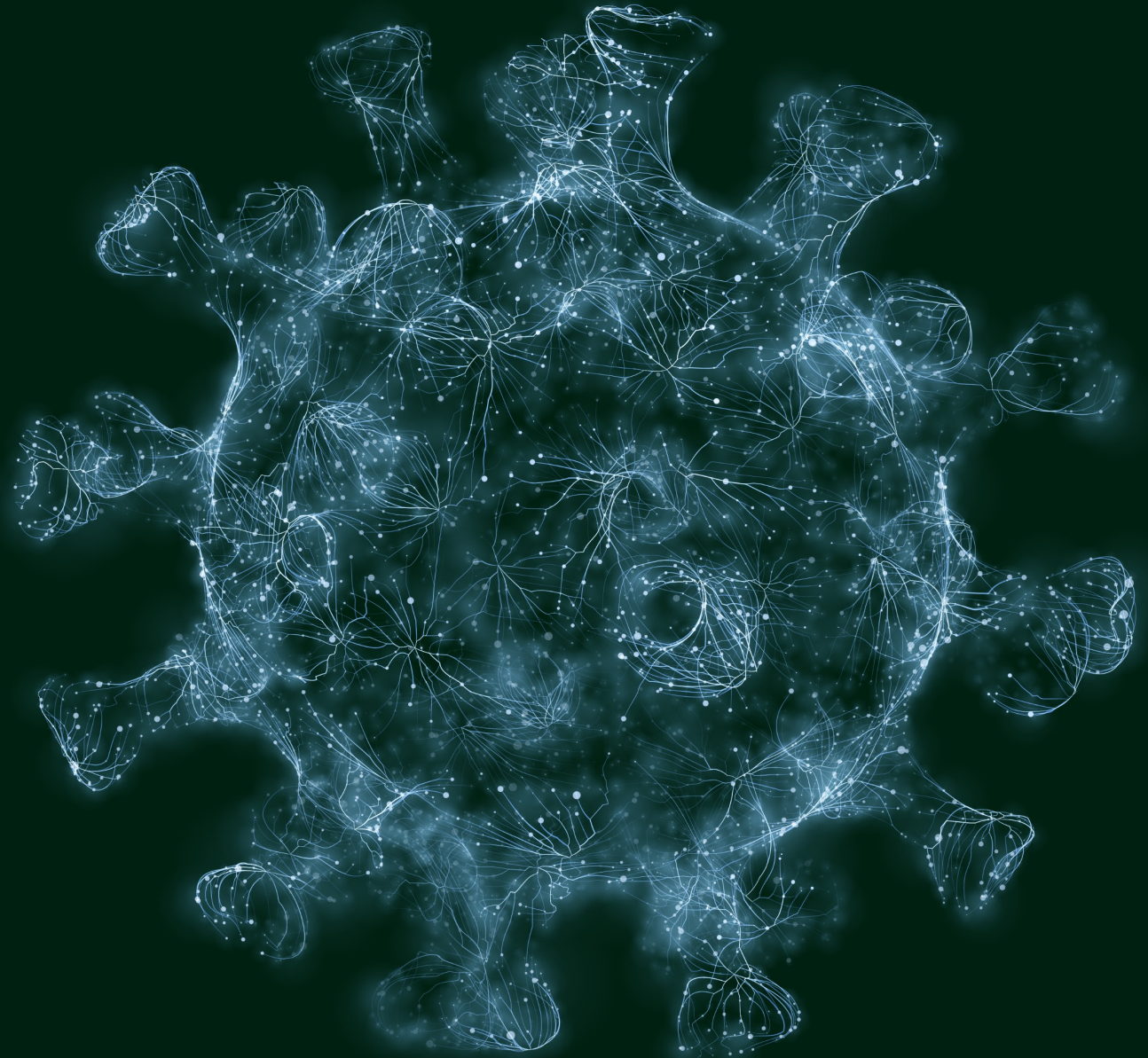
On the other hand,  
**one third** of all food  
produced is either **lost or  
wasted**



- During 2000 – 2019, food loss and waste (FLW) in Indonesia amounted to **115 – 184** kg/capita/year.
- Of which, **44%** was **edible food waste**.
- The loss of nutrition from FLW in 2000 – 2019 **could have fed 61 – 125 million people**.
- Potential economic losses was **IDR 213 – 551** trillion/year or **4 – 5% of Indonesia's GDP**.
- FLW also contributed to global warming by generating **1,702.9 Mton CO<sub>2</sub>-eq** or equivalent to **7.29% of total GHG emissions** Indonesia over the past 20 years.

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**Climate change** not only inducing **natural disasters** but also affecting the outbreak of **infectious diseases**



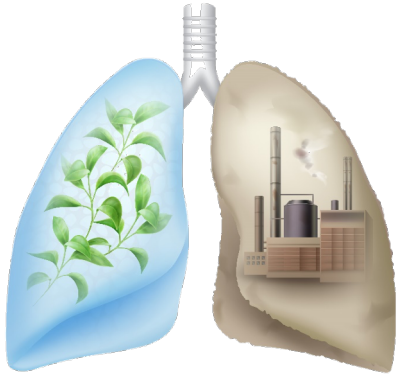


# Relations between climate change and infectious disease



**1** **Deforestation**, either through human activities or wildfires, may **accelerate the spread of Ebola** disease by increasing human-bat interactions.

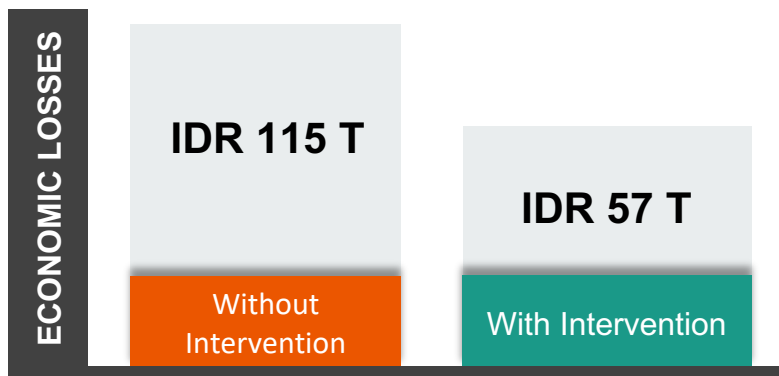
**2** Climate change made conditions **more favorable** to the spread of some infectious disease, including Lyme disease, waterborne disease, and **mosquito-borne disease** such as **malaria** and **dengue fever**.



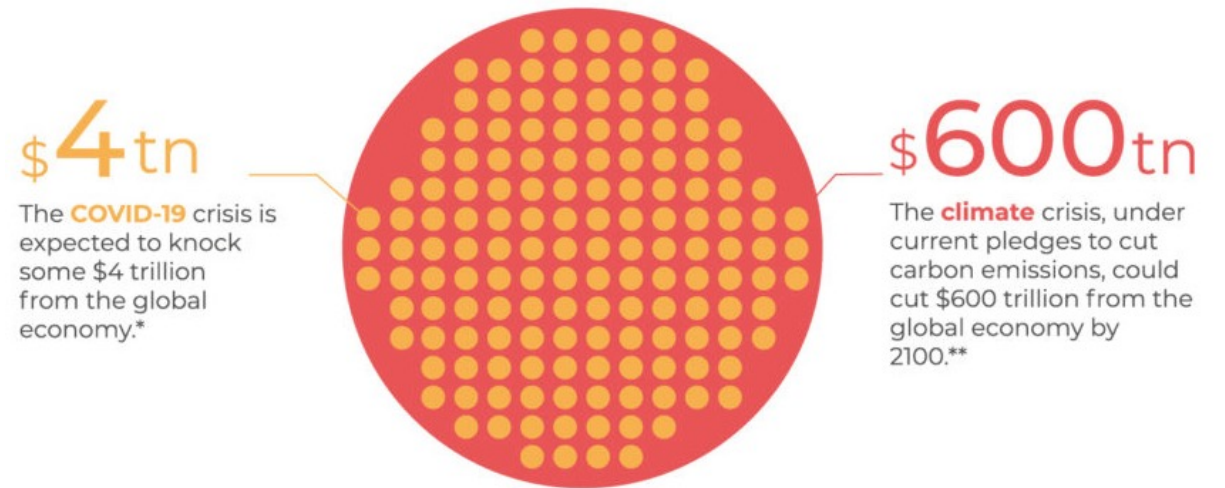
**3** **Reducing air pollution** caused by burning fossil fuels like coal, oil and natural gas also helps keep our lungs healthy, which can **protect us from respiratory infections** like coronavirus.

# Climate crisis should be mitigated to prevent further economic losses

- Bappenas estimated that potential **economic losses** due to climate change reach up to **IDR 115 Trillion** in 2024.
- It can be **reduced by 50%** through **intervention** in 4 sectors: **water, health, coastal marine, and agriculture.**



## COVID-19 vs CLIMATE ECONOMIC COSTS



The economic cost of climate change is equivalent to

**1.8x**  
covid-like contractions  
each year for 80 years

Source: <https://manifestclimate.com/blog/climate-change-comparable-covid/>



Economic activity should fall within the doughnut:  
**respecting planetary boundaries** while meeting basic needs and **ensuring well-being of the people**



# The Roles of University and Research Agency



1

## Research & Innovation

- Technological innovation is crucial in **addressing societal problem**. For example, Singapore is rapidly embracing lab-grown meat as a solution to tackle land scarcity and food security.
- Technological innovation can also **resolve trade-offs, between production and the ecosystem**. For example, through innovation in nanotechnology for solar panels, makes solar power cost-competitive with fossil fuel energy, making energy production more equitable and sustainable.



2

## Teaching & Advocacy

- **Direct community engagement** to educate local communities like on how to enact environmentally friendly measures or what is the impact of climate change mitigation can **enable a more sustainable society**.
- **Bridging research-policy gap**, to provide policymakers with robust and high-quality researches. For example, providing the true cost economics by internalizing externalities can build confidence in government concerning climate policy and push for more ambitious national goals.



# Thank you.



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The future will be green or not at all.

- Jonathan Porritt