

Global Environmental Health and Climate Change

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Water Pollution

One in nine people worldwide uses drinking water from unimproved and unsafe sources

90% of sewage in developing countries is discharged untreated directly into water bodies

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A woman and her son cross the Mithi River in Mumbai. SEBASTIAN D'SOUZA/AFP/GETTY IMAGES

Dying Waters: India Struggles to Clean Up Its Polluted Urban Rivers

Water Pollution

POLLUTION AS THE MAIN CAUSE OF POOR WATER QUALITY IN THAILAND



Industry discharges an estimated 300-400 megatonnes of waste into water bodies every year

A reduction of about one-third of the global biodiversity is estimated to be a consequence of the degradation of freshwater ecosystems mainly due to pollution of water resources and aquatic ecosystems

Deforestation

- Forests still cover about 30 percent of the world's land area, but they are disappearing at an alarming rate
- Between 1990 and 2016, the world lost 502,000 square miles (1.3 million square kilometers) of forest
- Since humans started cutting down forests, 46% of trees have been felled
- About 17% of the Amazonian rainforest has been destroyed over the past 50 years



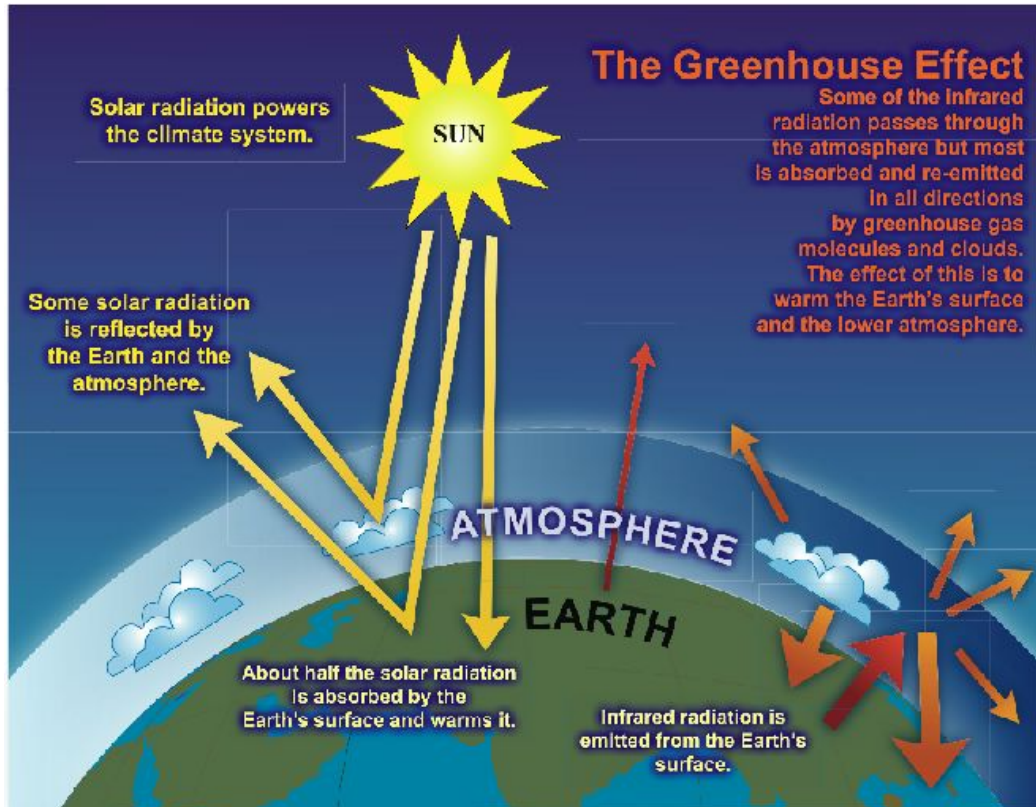
Danger of Deforestation



Loss of vegetation

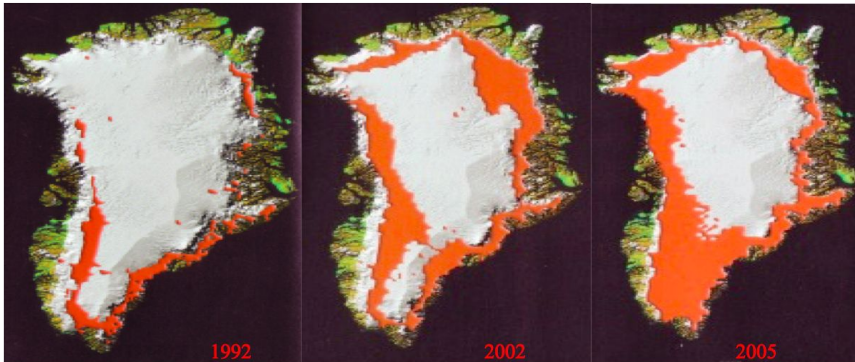
Produce greenhouse
gas emissions

Climate Change



Parameters of Climate Change

Melting of Greenland Island's surface ice is expanding



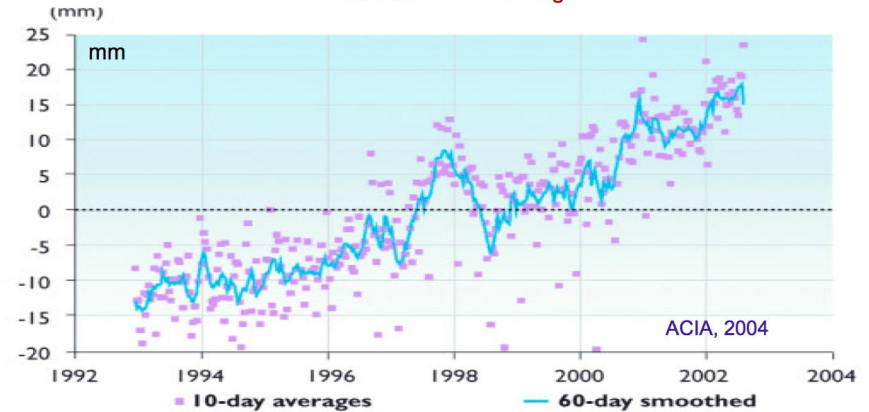
In 1992 scientists measured this amount of melting in Greenland as indicated by red areas on the map

Ten years later, in 2002, the melting was much worse

And in 2005, it accelerated dramatically yet again

Source: ACIA, 2004 and CIRES, 2005

Sea level is increasing



1993-2003 \approx 30 mm = 3.0 mm/yr; compare 1910-1990 = 1.5 ± 0.5 mm/yr.

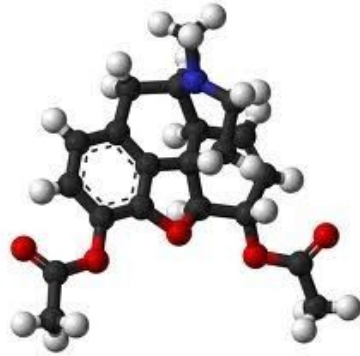
Parameters of Climate Change

Water
Availability

Extreme
Precipitation



Parameters of Climate Change



Chemical composition

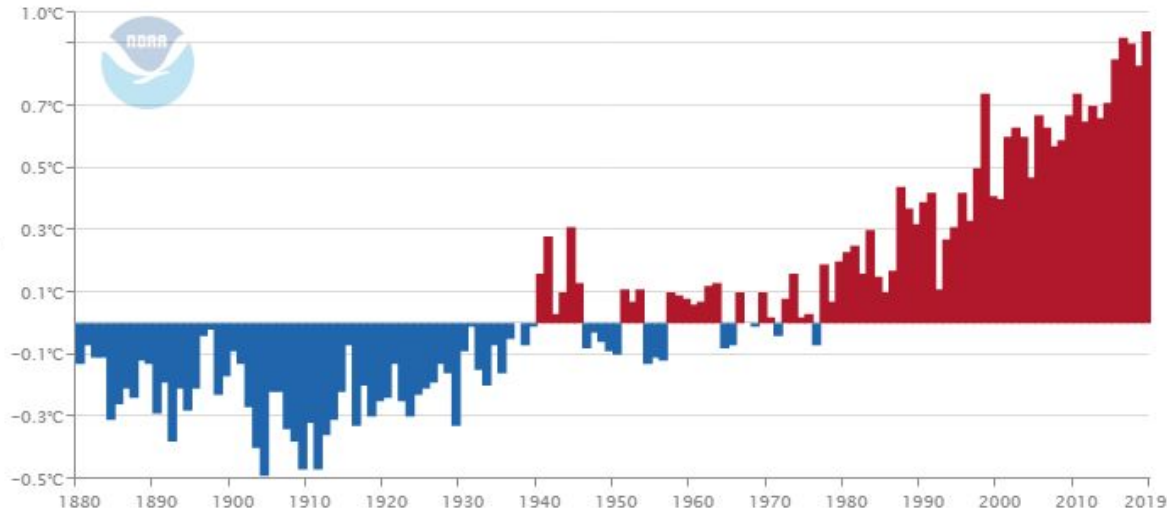


Biomass and vegetation

Parameters of Climate Change

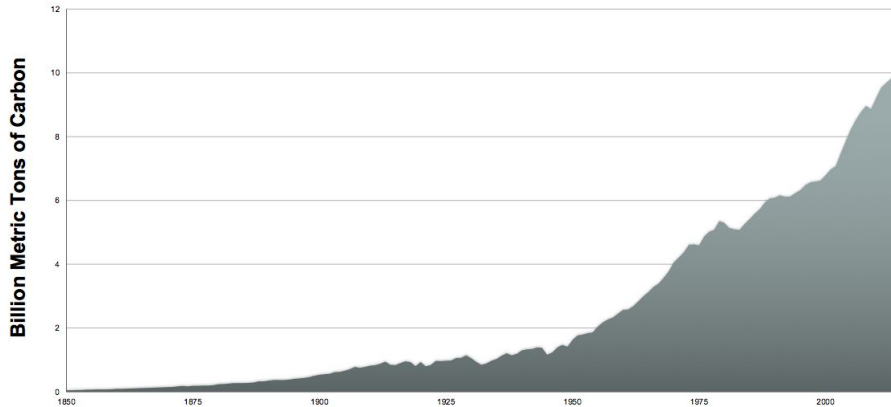
Rise in Global Average Temperature

Global Land and Ocean
July Temperature Anomalies



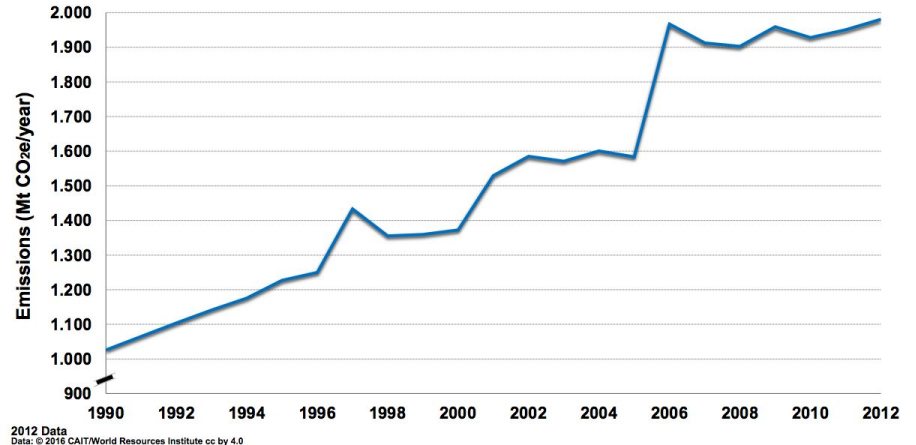
Increase in Greenhouse Gas Emissions

Global Carbon Emissions from Fossil Fuels



Data: U.S. Department of Energy/CDIAC

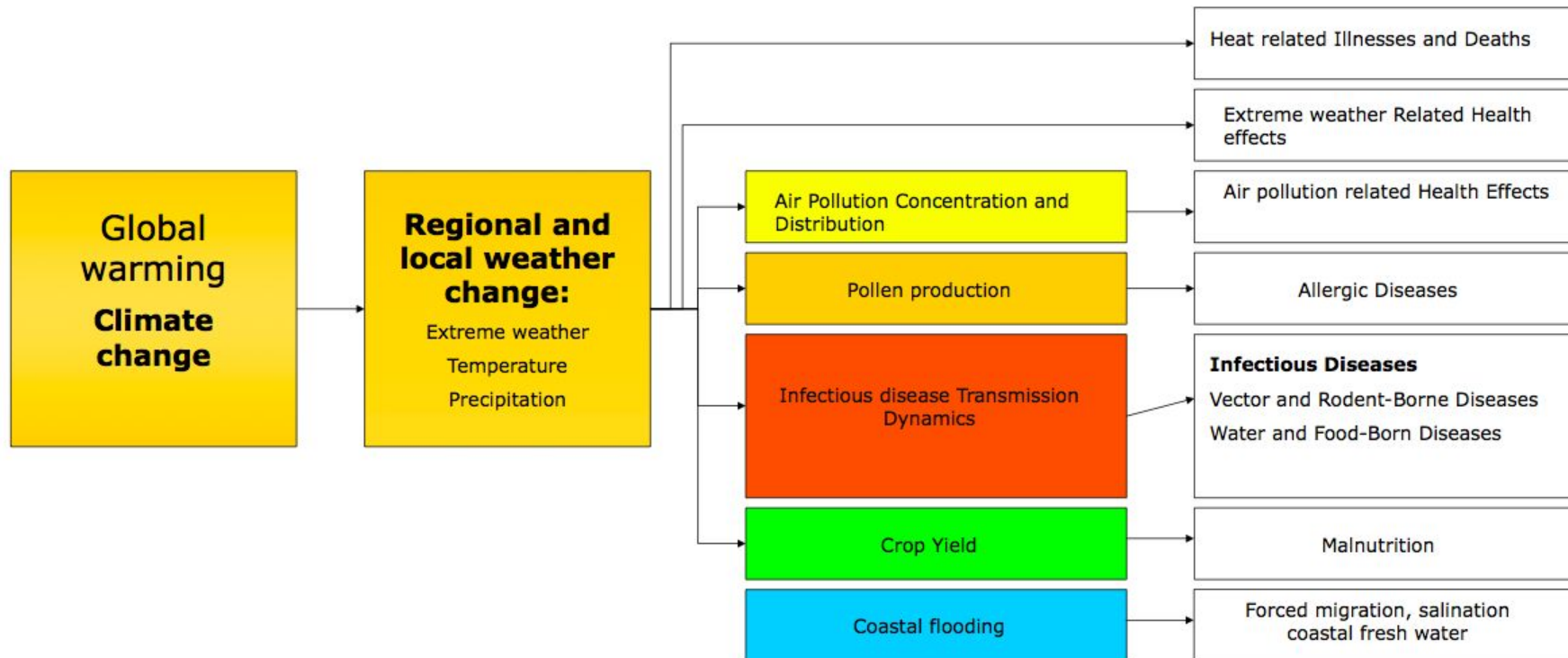
Indonesia's Greenhouse Gas Emissions



2012 Data
Data: © 2016 CAIT/World Resources Institute cc by 4.0

In keeping the temperature of global average temperature to the point it will bring no harm to people and natural ecosystem, **The Paris Agreement** adopted by 195 nations at the 21st Conference of the Parties to the UNFCCC in December 2015 included the aim of strengthening the global response to the threat of climate change by “**holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.**”

Potential Health Impacts of Climate Change



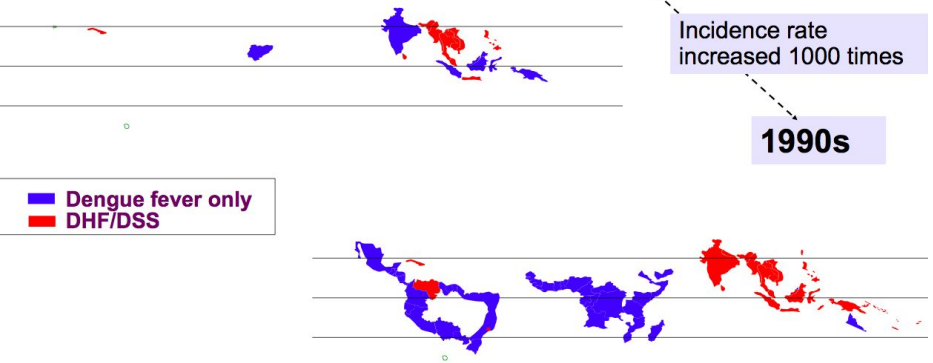
Increase in Dengue Trend

Global Dengue Epidemiology

1960s

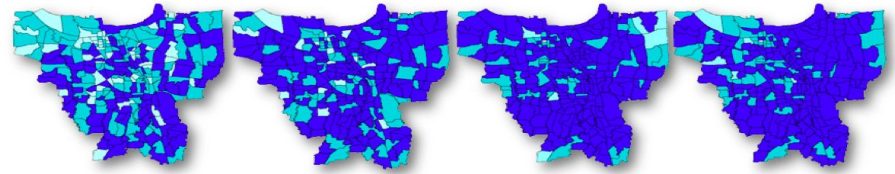
Incidence rate increased 1000 times

1990s



■ Dengue fever only
■ DHF/DSS

Dengue Trend in DKI Jakarta



2003 2004 2005 2006

MAPPING MORBIDITY OF DHF (INCIDENCE RATE - IR) IN DKI JAKARTA (2003-2006) (per 100.000 population per village)

■ IR < 100 cases per village
■ IR 100 - 200 cases per village
■ IR > 200 cases per village

Effects of Temperature Increase to the Transmission of Dengue Fever

The incubation period of the virus in mosquitoes is shorter

The mosquito breeding cycle is shorter

The frequency of eating mosquitoes more often

More efficient transmission of the dengue virus from mosquitoes to humans occur