

The Role of the Catholic Church in Addressing Global Environmental Challenges

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Outline of the presentation

- **Importance of ecosystems for provision of goods and services**
- **Ecosystems degradation**
- **Drivers of ecosystems degradation**
- **Costs of natural resources over-exploitation**
- **Greenhouse gas emissions**
- **Global warming and climate change**
- **Possible Futures**
- **Current efforts in addressing global environmental change**
- **Role of Catholic Church in addressing environmental challenges**

Importance of Ecosystems

Importance of the Ecosystems

- Nature is essential for human existence and good quality of life.
- Nature plays a critical role in providing food and feed, energy, medicines and genetic resources and a variety of materials fundamental for people's physical well-being and for maintaining culture.
- For example, more than 2 billion people rely on wood fuel to meet their primary energy needs
- An estimated 4 billion people rely primarily on natural medicines for their health care
- More than 75 per cent of global food crop types, including fruits and vegetables and some of the most important cash crops, such as coffee, cocoa and almonds, rely on animal pollination.
- Marine and terrestrial ecosystems are the sole sinks for anthropogenic carbon emissions,
 - with gross sequestration of 5.6 gigatons of carbon per year (the equivalent of some 60 per cent of global anthropogenic emissions).

Ecosystems Degradation

Ecosystems degradation

- The ecosystem is being altered across all spatial scales due partly due to anthropogenic activities and climate change.
- The world loses almost six million hectares of forest each year to deforestation.
- The demand for energy and resources has increased during the past 50 years as a result of;
 - the human population doubling,
 - the world economy nearly tripling in size,
 - and the tenfold increase in global trade.
- Seventy-five per cent of the land surface is significantly altered,
- About 66 per cent of the ocean area is experiencing increasing cumulative impacts,
- About 85 per cent of wetlands (area) have been lost.

Implications of Ecosystems degradation

- The loss of coastal habitats and coral reefs reduces coastal protection, which increases the risk from floods and hurricanes to life and property
- Around 1 million species already face extinction, many within decades unless action is taken to reduce the intensity of drivers of biodiversity loss.
- The global rate of species extinction is already at least tens to hundreds times higher than the average rate over the past 10 million years and is accelerating.
- The negative trends in biodiversity and ecosystem functions are projected to continue or worsen in many future scenarios in response to indirect drivers such as;
- rapid human population growth, unsustainable production and consumption and associated technological development.

Implications of Ecosystems degradation

- Costs of ecological overspending are more and more evident by the day;
 - deforestation,
 - drought,
 - water scarcity,
 - soil erosion,
 - biodiversity loss and
 - carbon dioxide build-up in the atmosphere – global warming

Implications of Ecosystems degradation

- All these changes are on the rise and worsening.
- Yet, our entire wellbeing relies on services flowing from ecological systems
- Maintaining and securing ecological integrity is a moral obligation as well as an economic imperative.
- We are not the inheritors of the Earth's natural resources, but rather custodians.
- We have to use these resources in a sustainable manner.

Global Efforts to Address Ecosystems Degradation

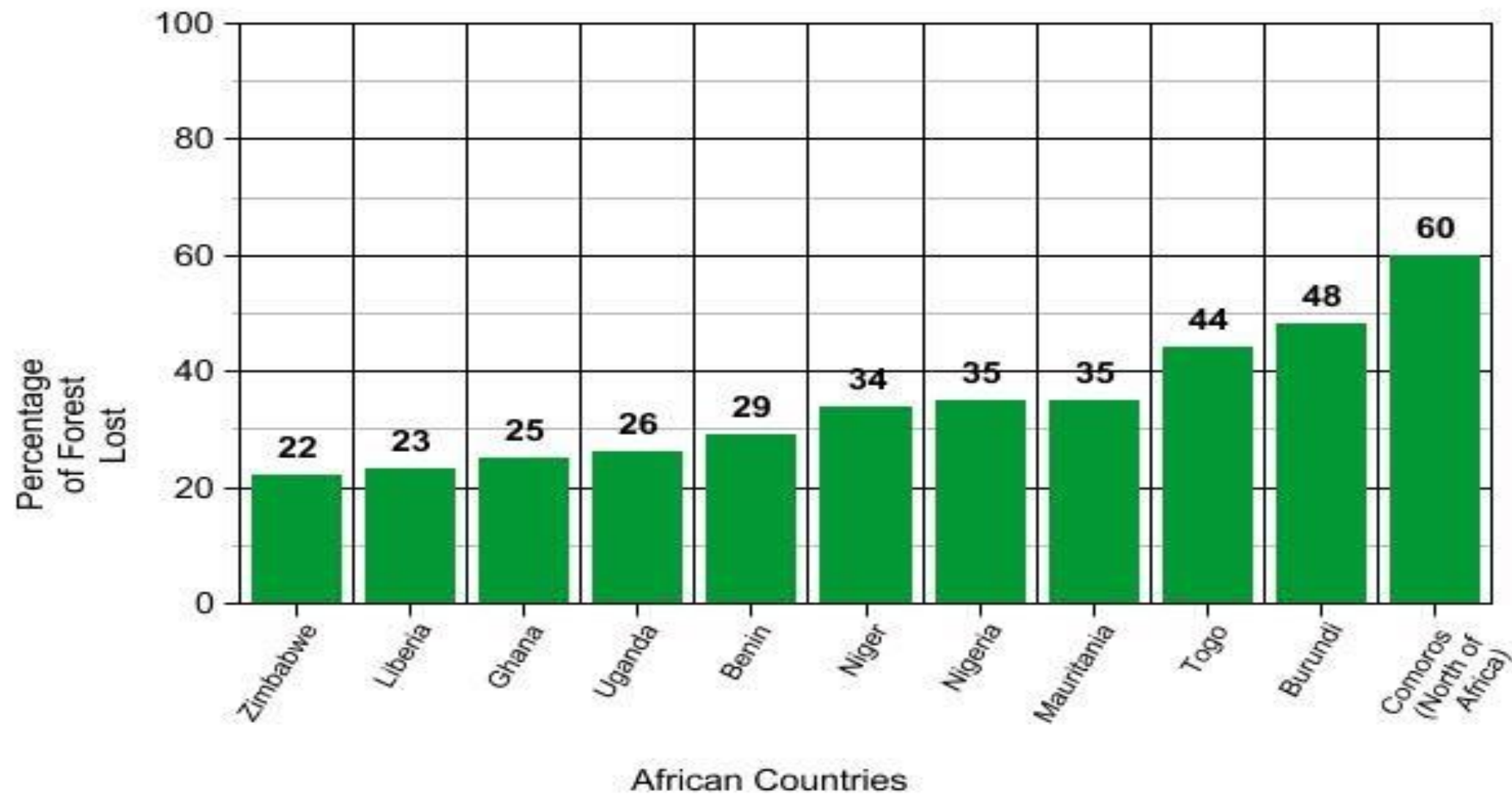
- There is an increasing recognition that humanity's development trajectory needs to be aligned with our moral and spiritual values.
- Hence, the international community has taken actions to tackle the over-increasing environmental challenges including climate change.
- There are number of global actions seeking to address the ever-increasing global environmental challenges
 - Adoption of the 2030 Agenda for Sustainable Development
 - Paris Agreement in December 2015

Drivers of Ecosystems Degradation

Drivers of Ecosystems Degradation

- Growing populations in the Least Developed Countries have led to;
 - shortage of land, water, and wood in rural areas, and
 - sanitation problems and water shortages in urban areas
- Increasing populations contributes to accelerated degradation of key resources
- Insecure land rights, lack of credit and inputs may inhibit poor people from investment on land resources management

Percentage of Forest Lost in Africa 1990-2005



http://earthobservatory.nasa.gov/Features/Deforestation/deforestation_update3.php

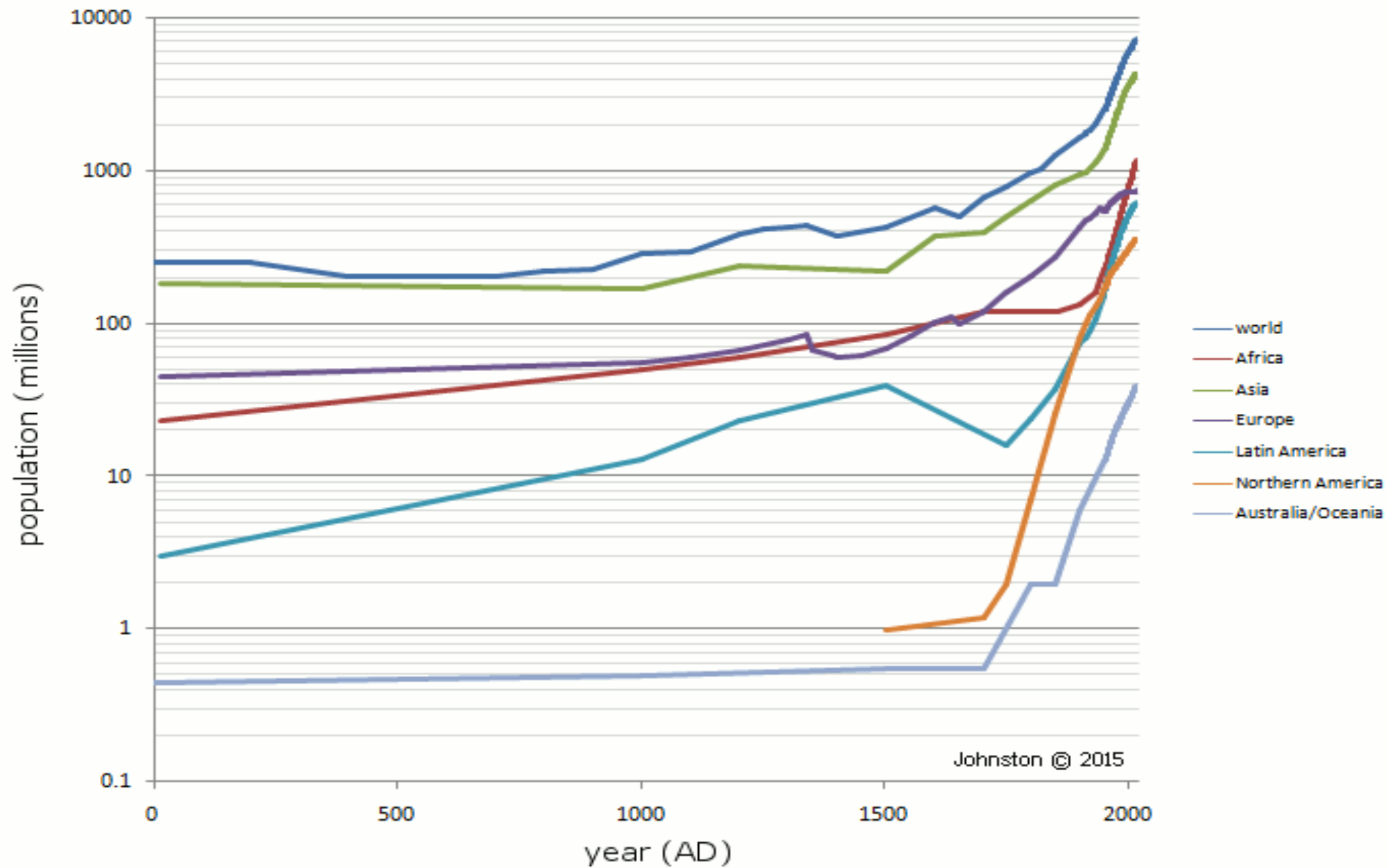
Drivers of Ecosystems Degradation

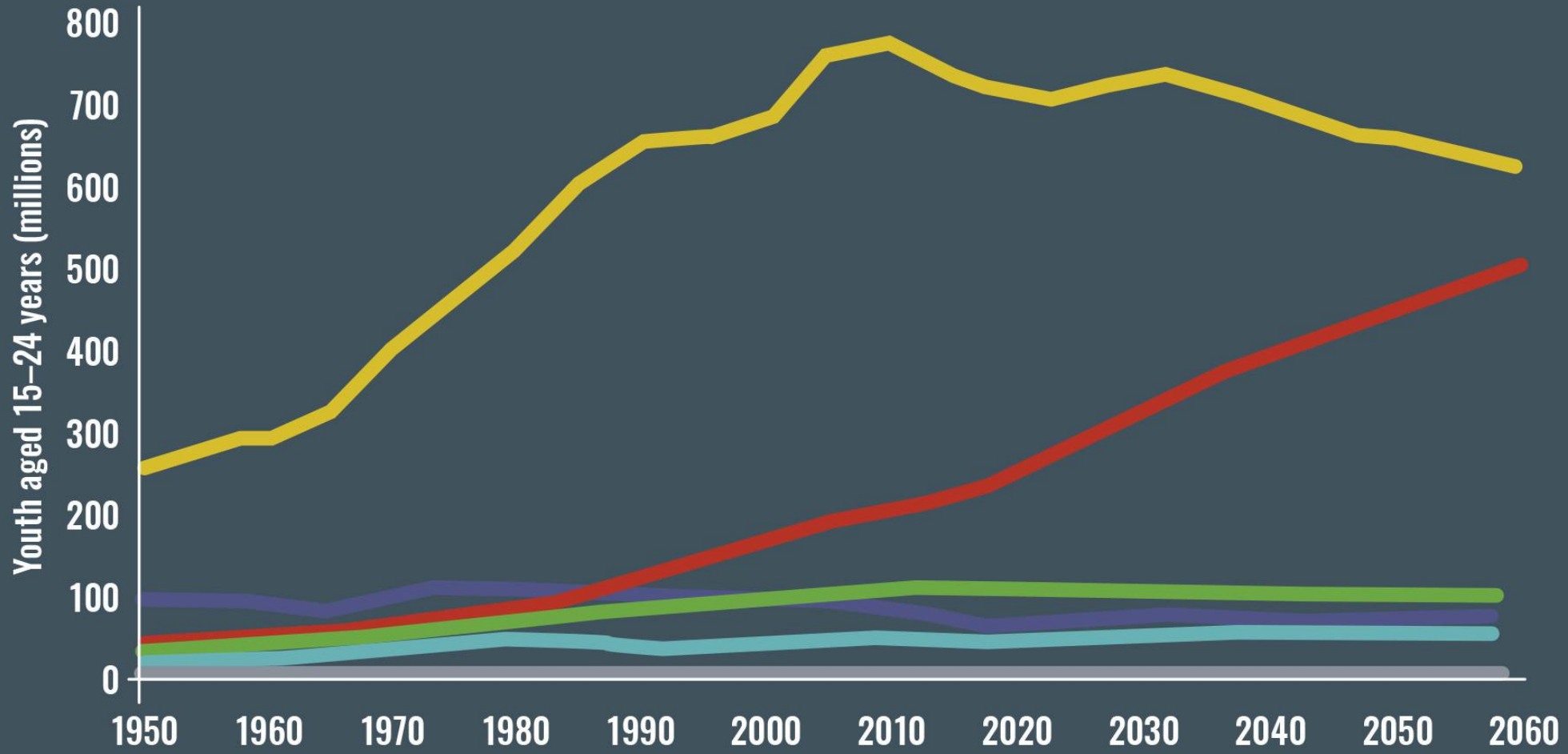
- Question of whether is possible to achieve economic growth without environmental damage
- It is argued that worst environmental damage is done by the richest and poorest people
- It is thus debatable whether increasing incomes of the poor would decrease environmental damage
- Increasing consumption while keeping environmental degradation low is difficult
- **Hence;**
 - Environmental issues affect, and are affected by, economic development
 - Poverty and ignorance may lead to non-sustainable use of environmental resources

Drivers of Ecosystems Degradation

- Growing Least Developed Countries populations will require more food production
 - However, technology has not changed
- Land in LDC are already being overworked by the existing population
- Thus calling for environmentally friendly production system

World and regional populations





Asia Africa Latin America and the Caribbean
Europe North America Oceania

Drivers of Ecosystems Degradation

- Rapid population increase and rural-urban migration has led to increasing urban population growth
- Increasing demand on existing urban water supplies and sanitation facilities
- Resulting in health hazards as circumstances allow for epidemics and health crises

Drivers of Ecosystems Degradation

- **The poor as both agents and victims of environmental degradation**
- **Victims:**
 - The poor live in environmentally degraded lands which are less expensive because the rich avoid them
 - People living in poverty have less political clout to reduce pollution where they live
 - Living in less productive polluted lands gives the poor less opportunity to work their way out of poverty
- **Agents:**
 - The high fertility rate of people living in poverty
 - Short time horizon of the poor (by necessity)
 - Land tenure insecurity;
 - Incentives for clearance of forests to support their livelihoods

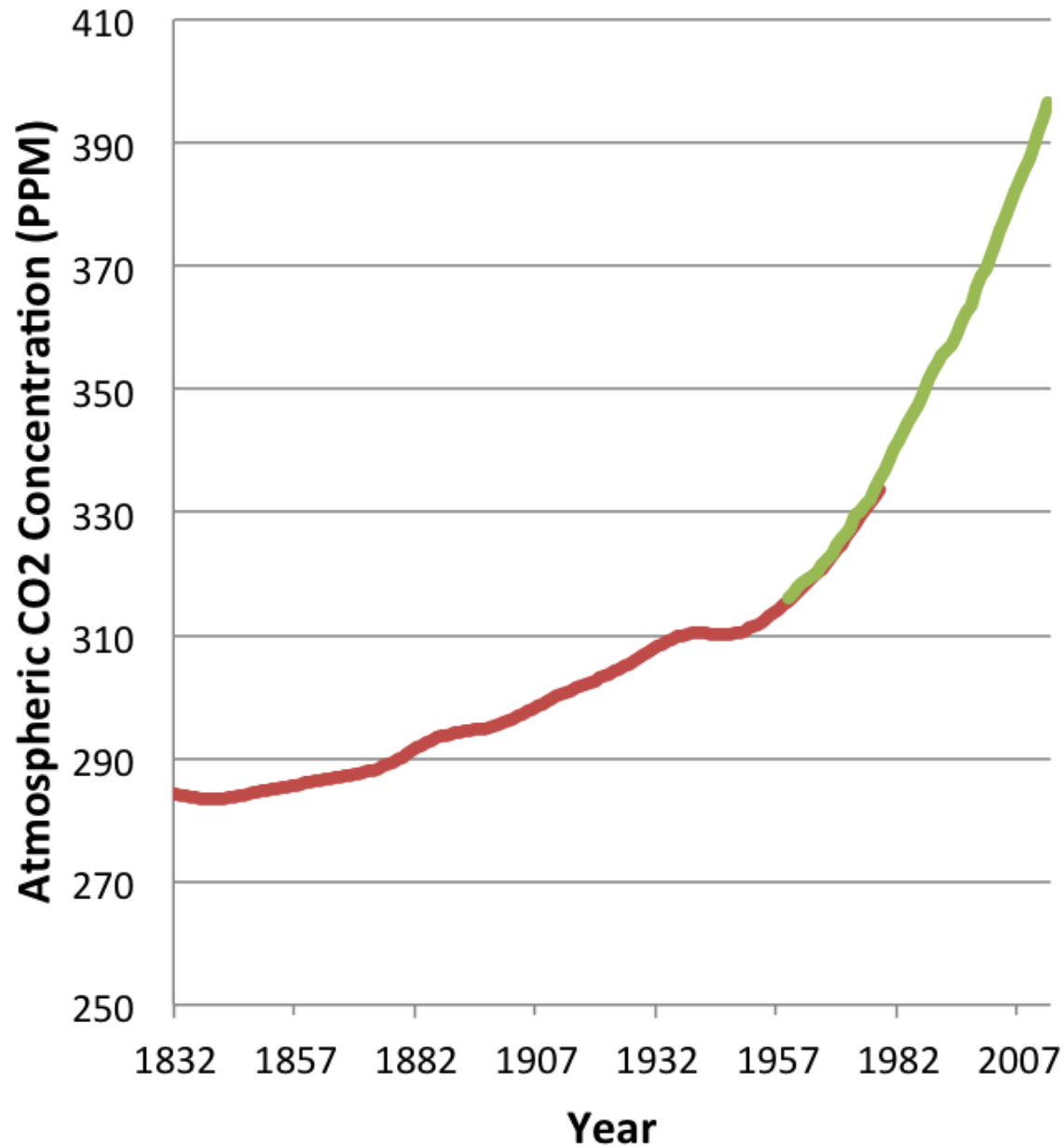
Costs of Natural Resources Over-exploitation

Costs of Natural Resources Over-exploitation

- Contributes to greenhouse gas emission - *global warming*
- Loss of biodiversity
- Loss of livelihoods for people living in poverty who depend upon them
- Thus, a well managed forest is a global public good
- Sustainable management of forests is a priority
- In addition, support for forest preservation as climate change mitigation

Greenhouse gas emissions

Historic Atmospheric CO2 Concentrations

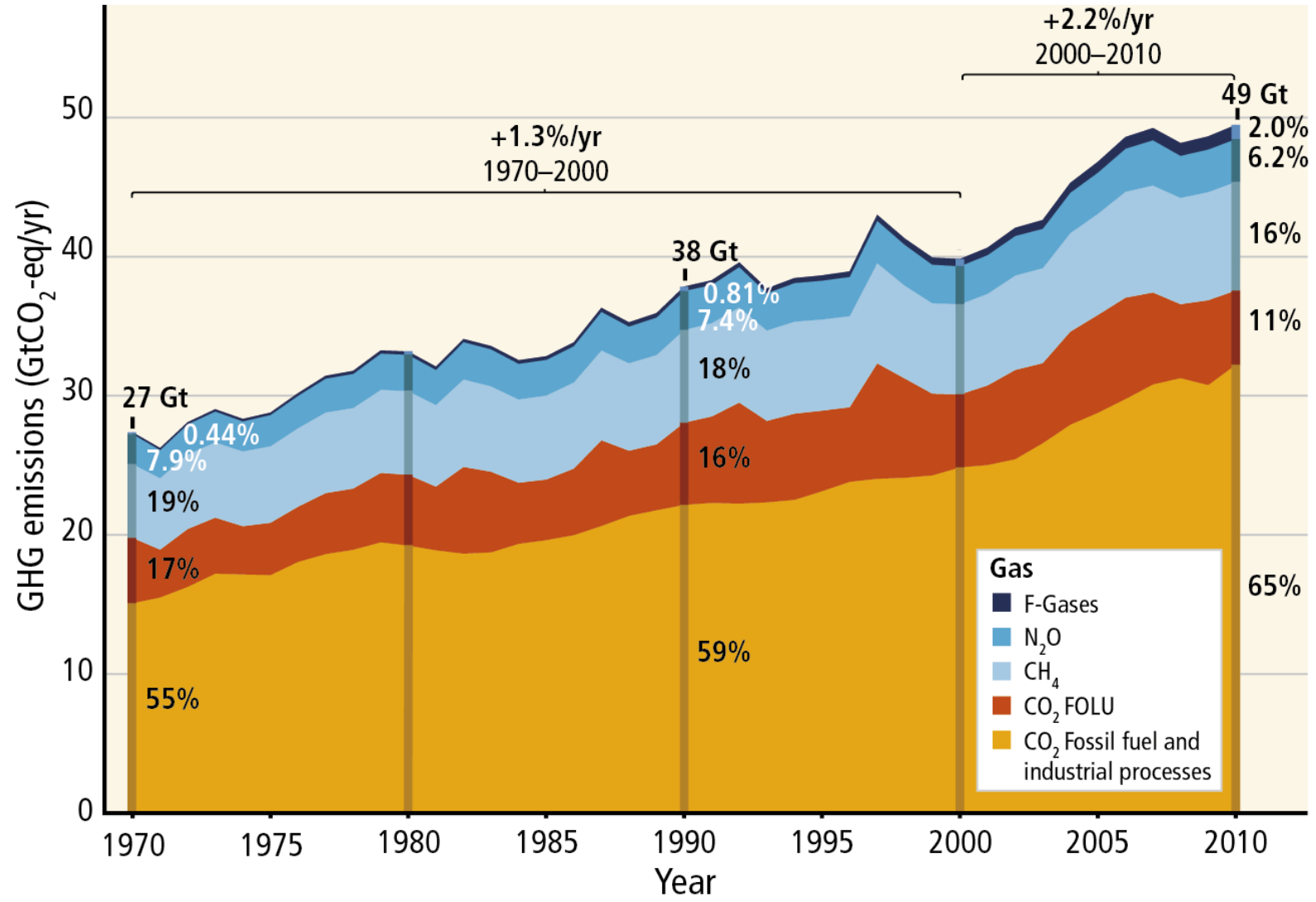


- Law Dome Ice Core Recorded CO2
- Mauna Loa Observatory Recorded CO2

Sources:

- **Mauna Loa Observatory, NOAA:**
ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_annmean_mlo.txt
- **Law Dome Ice Core, Carbon Dioxide Information Analysis Center:**
<http://cdiac.ornl.gov/ftp/trends/co2/lawdome.combined.dat>

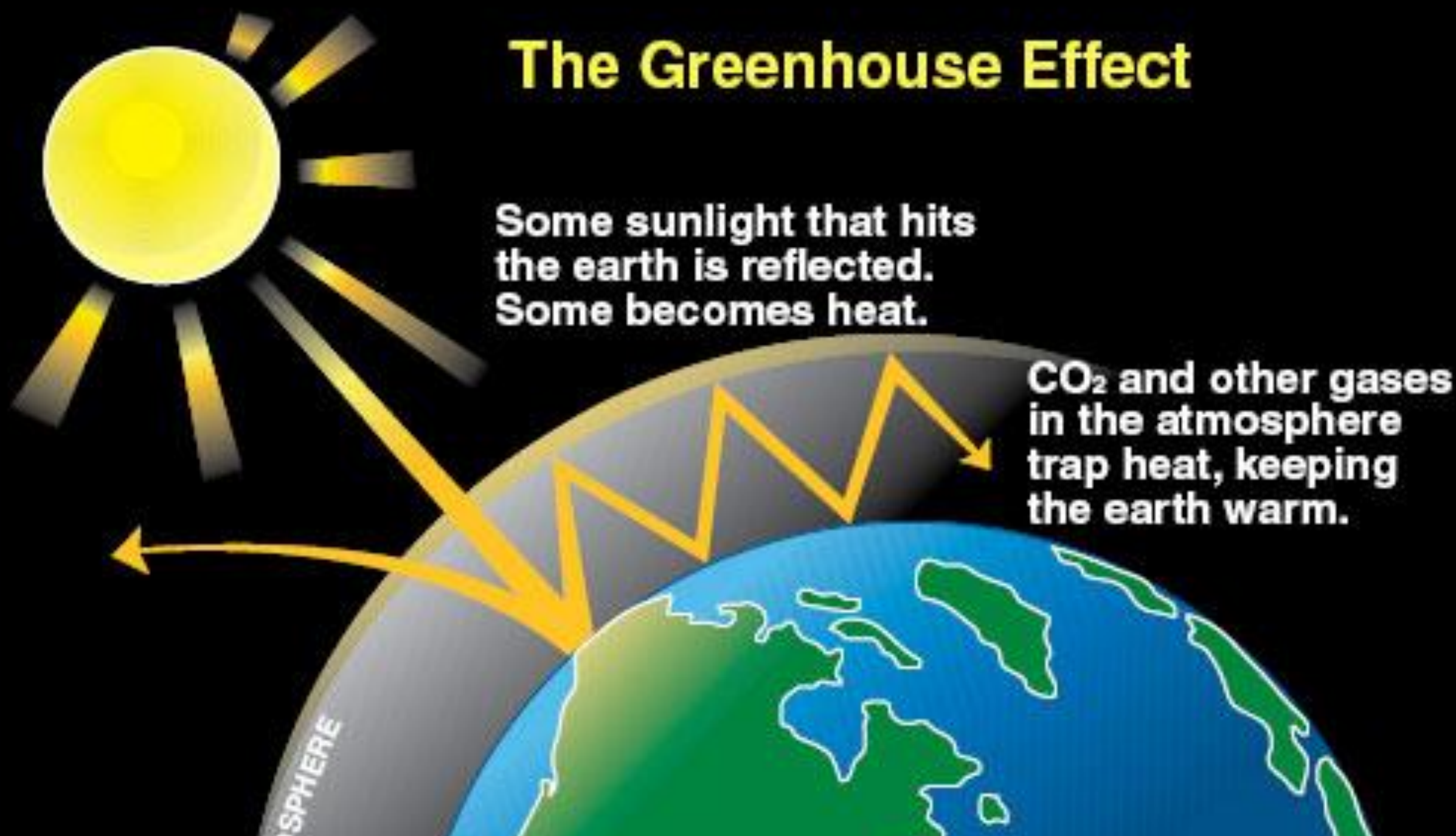
Total annual anthropogenic GHG emissions by gases 1970–2010



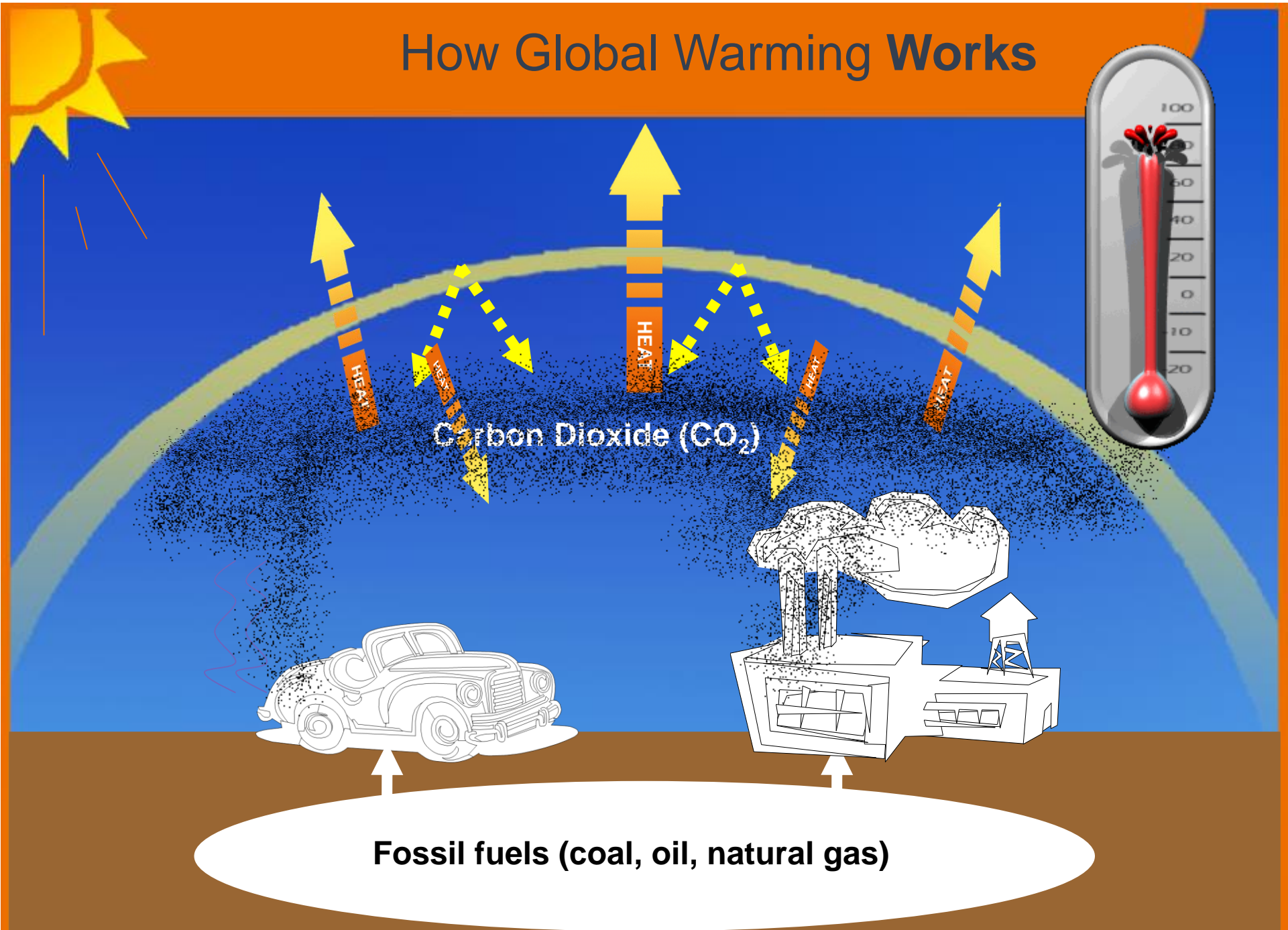
The Greenhouse Effect

Some sunlight that hits the earth is reflected. Some becomes heat.

CO₂ and other gases in the atmosphere trap heat, keeping the earth warm.



How Global Warming Works



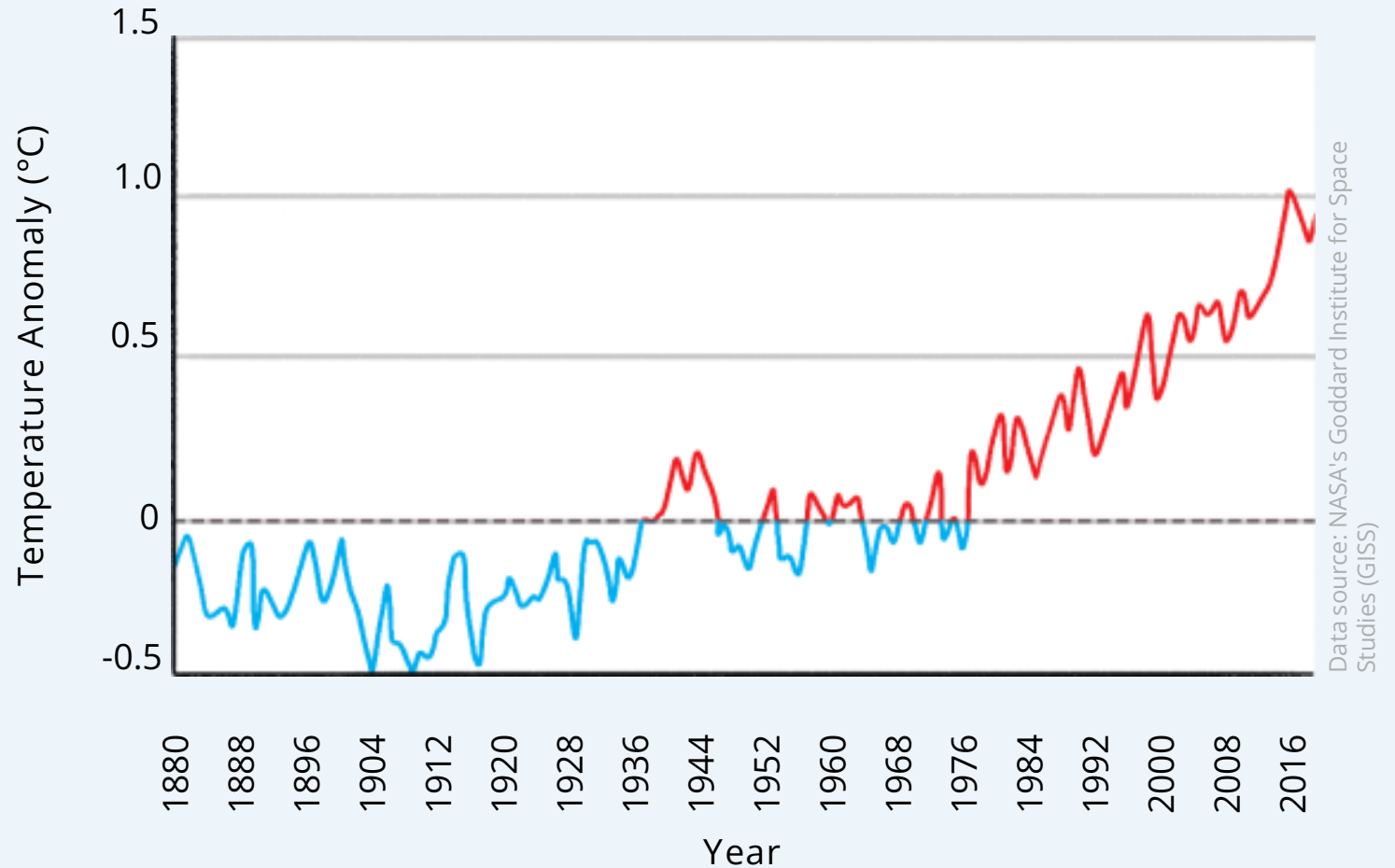
Global Warming and Climate Change

What Is Climate Change?

Since 1880, scientists have kept thermometer-based records of the global surface temperature.

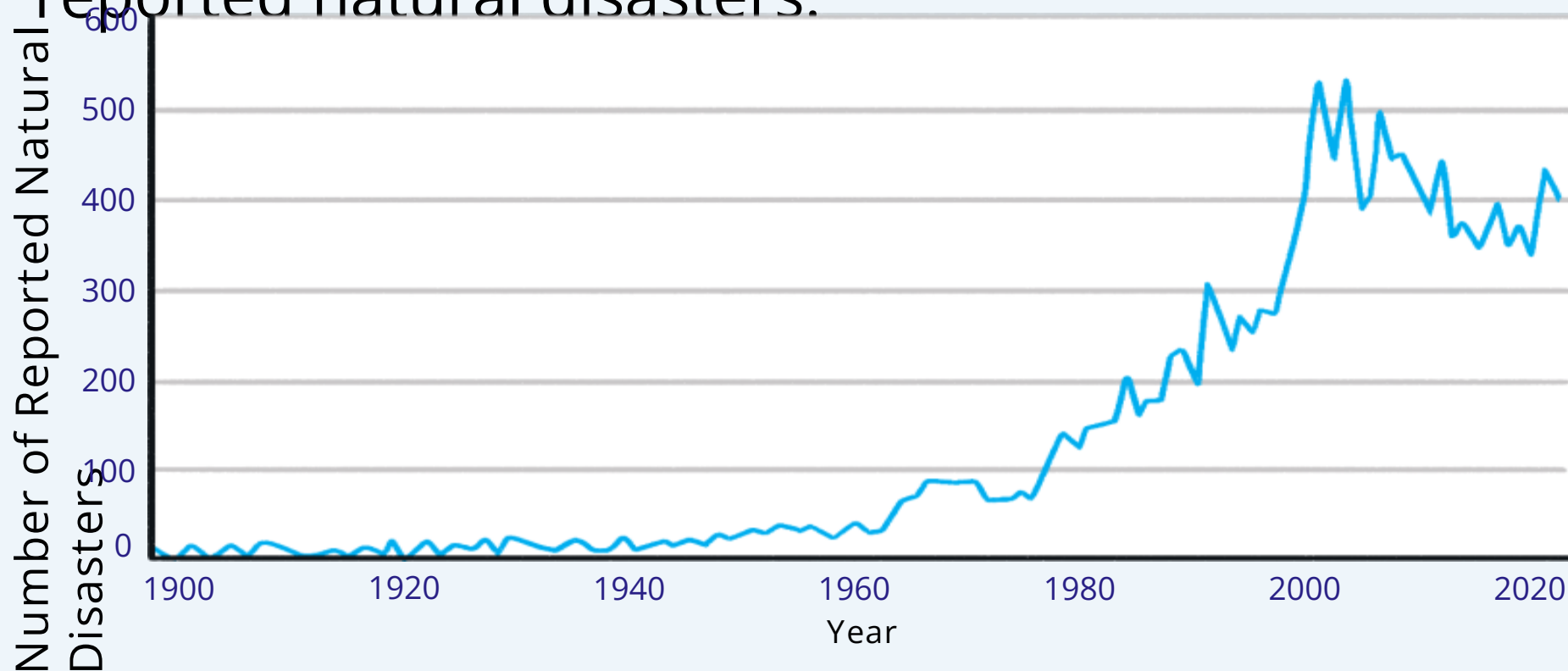
What is happening to the global temperature?

The planet is becoming warmer; the climate is changing.



Why Is Climate Change a Problem?

- Climate change disrupts weather patterns and causes extreme weather events to become more common. These include hurricane activity, droughts and floods.
- As the global temperature has increased, so has the number of reported natural disasters.



Data source: EM-DAT International Disaster Database



Why Is Climate Change a Problem?

Rising temperatures are causing sea levels to increase.

The rising water can cover coastal areas, destroying habitats and displacing whole populations from low-lying areas.

Rising sea levels are driven by two main processes:

1. Ice Melt: When the atmosphere and ocean get warmer, ice sheets and glaciers melt, resulting in the addition of fresh water to the ocean.
2. Thermal Expansion: As ocean water gets warmer, it expands, causing sea levels to rise



Glaciers are melting

So are ice caps on both North and South poll. Pictured example: Portage Glacier, Alaska



1914



2004

Inundation due to Sea Level rise

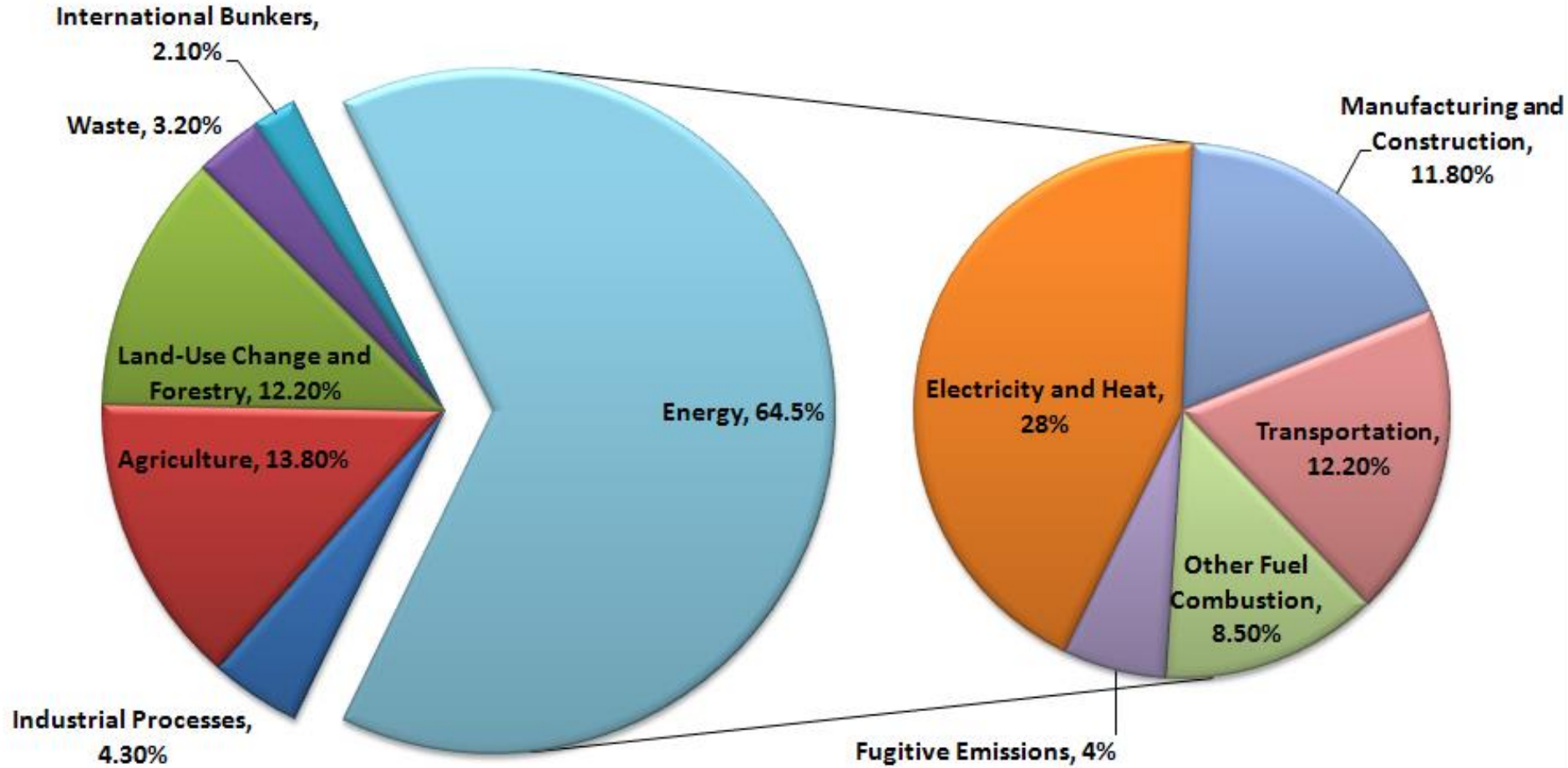
- Some islands are at the risk of disappearance
- Thus threatening lives of people
- Example, Republic of Maldives: Vulnerable to sea level rise
 - Global sea level rose about 17 centimeters (6.7 inches) in the last century.
 - The rate in the last decade is nearly double that of the last century



Inundation Due to Sea Level Rise



Global Anthropogenic GHG Emissions by Sector 2005



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Jim van Passel / WWF

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What Causes Climate Change?

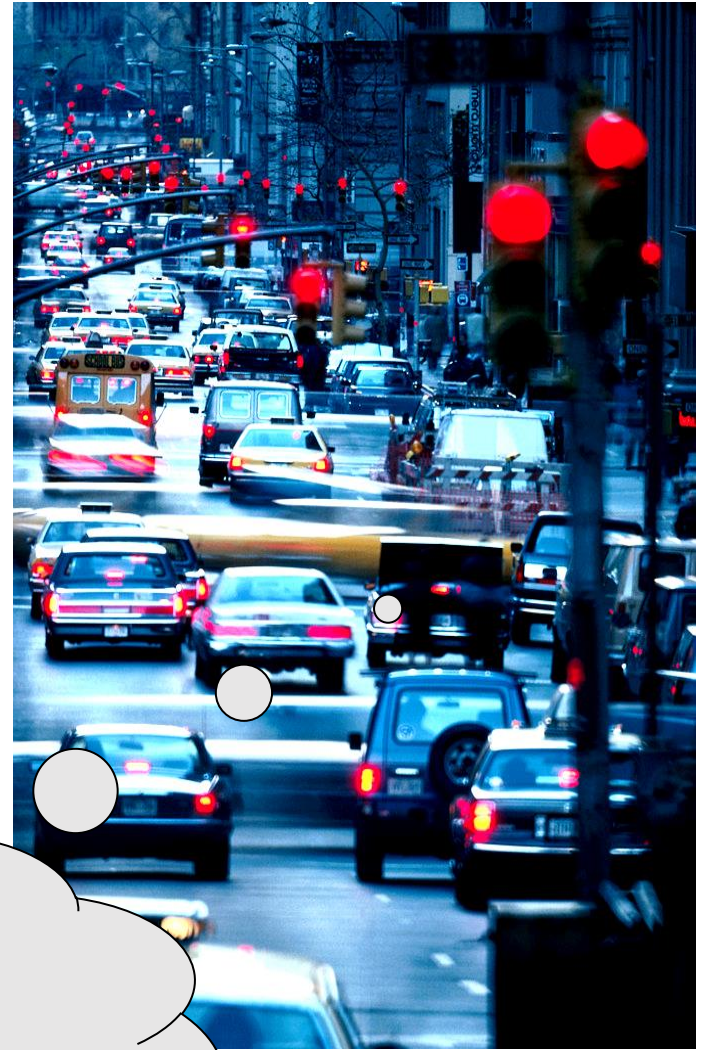
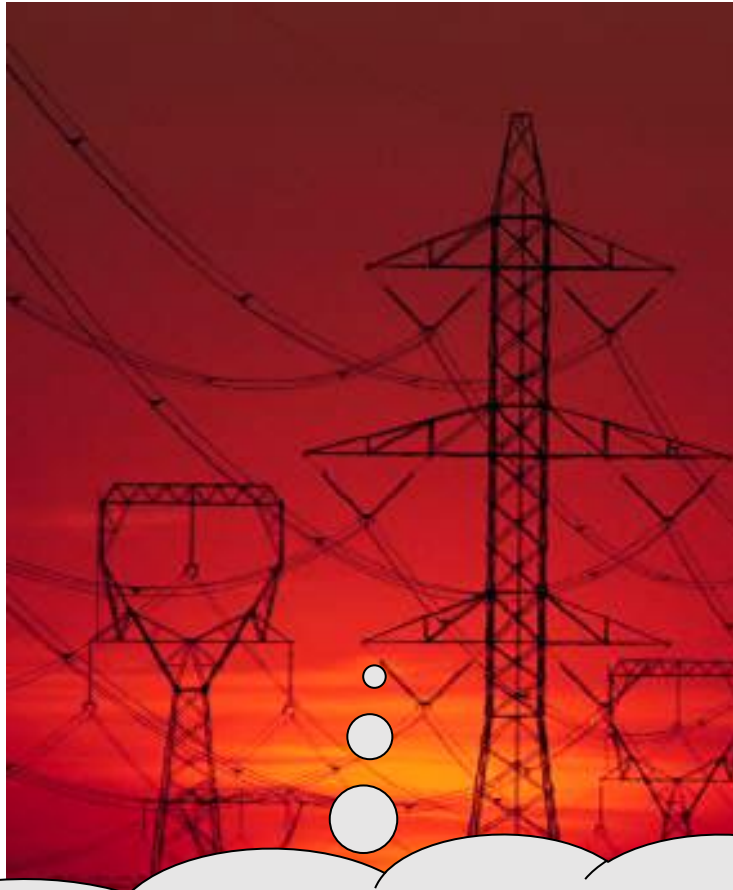
- Climate change can be caused gradually by natural processes or suddenly by large events, such as a massive meteorite strike or volcanic activity.
- However, the rapid climate change we are experiencing now is due to three main human activities:
 - Burning fossil fuels for heating and cooking, generating electricity and powering vehicles releases carbon dioxide into the atmosphere.
 - Deforestation (destruction of forests) releases carbon dioxide and reduces the number of trees able to capture carbon dioxide from the atmosphere.
 - Reduction of biodiversity creates an unstable ecosystem.
 - Nature loss leads to ecosystems that are less able to capture carbon from the atmosphere



Untitled by © Sam Hobson / WWF-UK licensed under CC BY



Deforestation for future agriculture plantation-Tahuamanu Province, heading to Centro Poblado de Alerta - Madre de Dios Region, Peru by © Nicolas Villaume / WWF-US licensed under CC BY

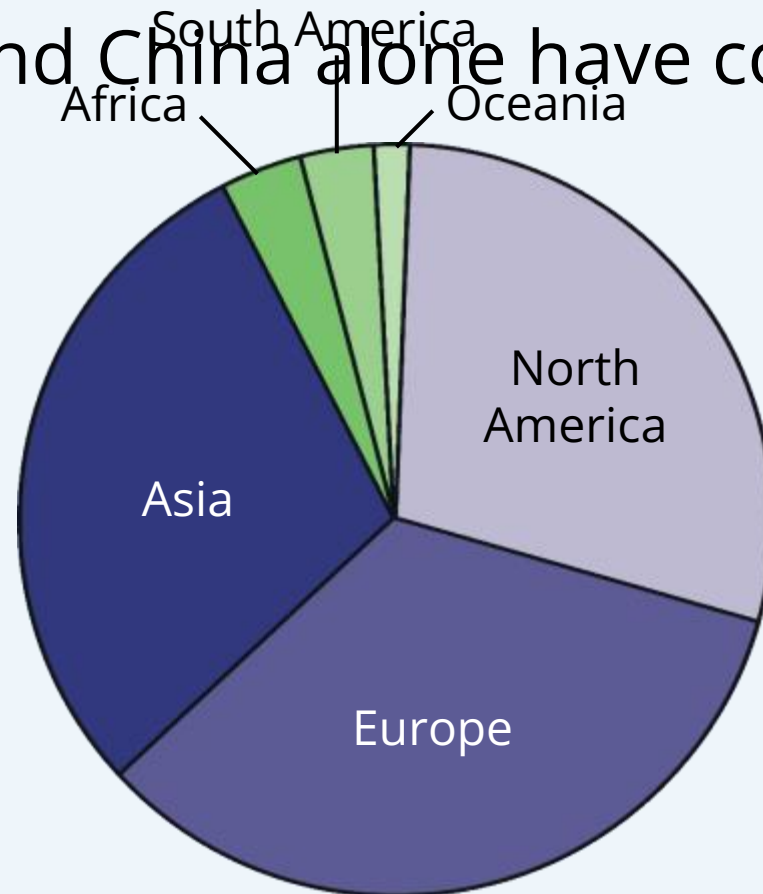


Pollution from coal, natural gas, and oil

Who Causes Climate Change?

The 50 least developed countries are thought to have contributed 1% of the greenhouse gases that have caused global warming.

The USA, the EU and China alone have contributed around 60%.



Possible Futures

Possible Future Effects of Climate Change

- Warming and sea level rise will continue and will probably occur more quickly than what we've already seen
- Even if greenhouse gases are stabilized, this will probably continue to occur for centuries
- Some effects may be permanent

Possible Future Effects Climate Change on Ecosystems

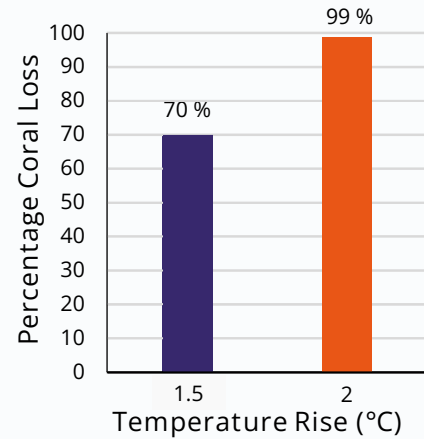
- Coral systems and other unique ecosystems cannot handle higher temperatures well
- Wildfires will increase
- Up to 30% of species will be at increased risk for extinction due to the rapid changes in their ecosystems

Why Is Climate Change a Problem?

Coral Bleaching



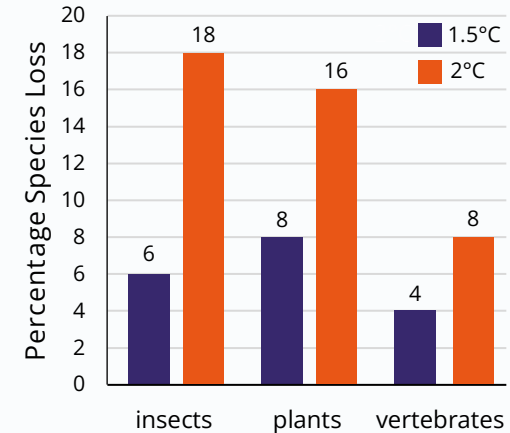
Bleached coral, Maldives by © naturepl.com / Peter Scoones / WWF licensed under CC BY



Species Loss



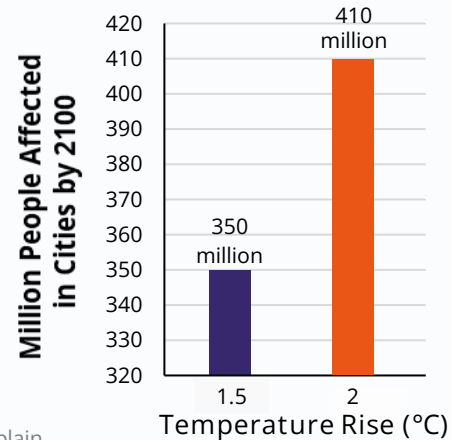
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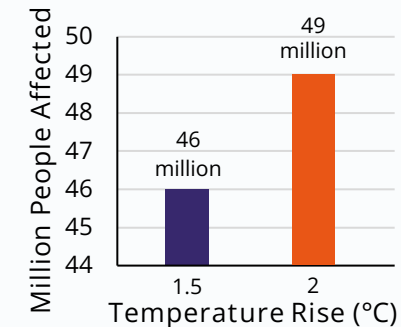
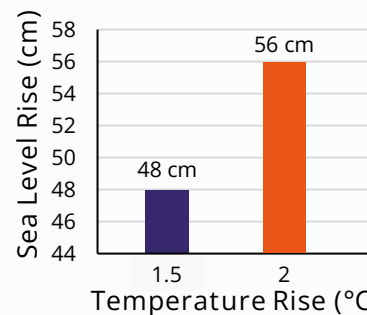
Drought



Dried up fishing pans in Liywa plain National Park by © Jasper Doest / WWF licensed under CC BY



Rise in Sea Level



Climate change adaption Wadden sea by © Claudi Nir / WWF licensed under CC BY



Who Does Climate Change Affect?

- In the long term, everyone will feel the effects of climate change. However, some people are currently more affected than others.
- In most cases, the wealth of prosperous countries has come from activities which contribute to greenhouse gas emissions.
- This wealth allows these countries to protect themselves from the effects of climate change.
- Poorer countries are less able to adapt to climate change and therefore suffer the most from its effects.
- They are also less able to develop because they need to focus


The countries which have contributed the least to the climate crisis are the ones which are affected the most.



Is this fair?

Who Can Fix It?

We all have a role to play

- **Governments** can make laws and policies that reduce the amount of greenhouse gas emissions (mitigation) and reduce climate change impacts (adaptation).
- **Businesses** can change their processes to run more sustainably.
- ***The Church has an important role to play***
- **We** can all make choices in our own lives that reduce our carbon footprint (the impact our actions and purchases have on climate change).
- **We** can also use our voices to let businesses and governments know that  we want them to act quickly to reduce their impact on climate change.

Current Efforts in Addressing Global Environmental Change

Current Efforts in Addressing Global Environmental Change

- International conventions and treaties were established to guide interventions particularly in areas related to;
 - biodiversity loss,
 - land degradation,
 - pollution, and
 - climate change.
- A number of multilateral organizations such as IPCC, UNFCCC, UNCCD as international scientific and policy instruments.
- Regional bodies and national governments have put in place legal and policy frameworks
- Financial portfolios were established to support interventions. These include;
 - Adaptation Fund,
 - Green Climate Fund,
 - Global Environmental Facility

Role of Catholic Church in Addressing Environmental Challenges

Role of the church in addressing environmental challenges

- We recognize that all created things belong to God and that we are accountable to Him as stewards of the creation.
- God commissions us to rule over the creation in a way that sustains, protects, and enhances his works so that all creation may fulfill the purposes God intended for it.
- We must manage the environment not simply for our own benefit but for God's glory.

Role of the church in addressing environmental challenges

- Some may argue we should focus our efforts on meeting the needs of people rather than addressing environmental issues.
- However, many of our environmental problems negatively impact people.
- If we fail to care for the environment in which we live, God's people will suffer as a result.

Role of the church in addressing environmental challenges

- Caring for the non-human parts of the creation and preserving the intricate interactions among them is an important part of seeking justice for God's people.
- Now that human behavior is responsible for the destruction of God's creation motivated by economic gains and poverty, church's intervention is required to serve this planet.
- God's word requires us to be responsible for sustaining the natural resources and the general environment for the present and future generation.

Role of the church in addressing environmental challenges

- Encyclical letter *Laudato Si'* of the Holy Father Francis on care for our common home issued in 2015 reminds us on our responsibility for caring our common home.
- The letter elaborates on the magnitude and root cause of the challenge, and urgency for immediate action to serve the planet.
- The letter further calls for humanity to recognize the need for changes of lifestyle, production and consumption, in order to combat this global environmental change or at least the human causes which produce or aggravate it.

Role of the church in addressing environmental challenges

- There is no doubt that the church is in a better position to make a difference.
- Strength of the church is based on its ability to influence societal behavior change for the benefit of the present and future generation.
- The network that the church has across scales provides an added advantage to perform this task granted to us by God.
- However, this can only be realized only if there is enabling environment including good will by all key players.

We can if we decide to act accordingly

I beg to submit

Thanks for listening