CLIMATE CHANGE

Understanding the Impacts and Taking Action


LET`S DISCUSS THE IMPACTS OF CLIMATE CHANGE ON OUR PLANET AND THE STEPS WE CAN TAKE TO ADDRESS THEM.

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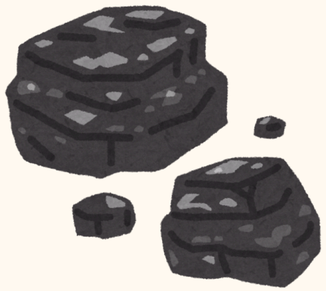
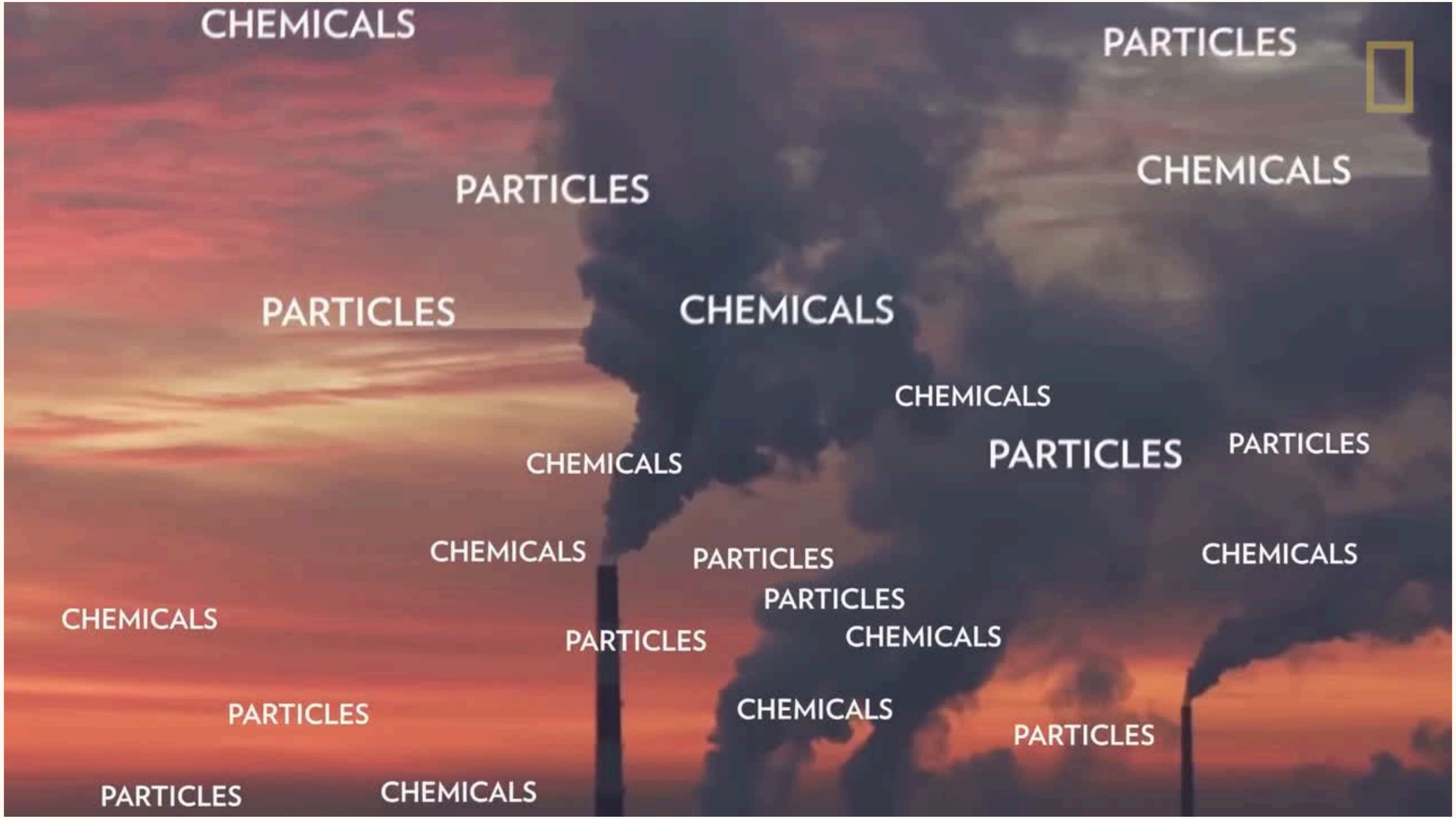
WHAT IS CLIMATE CHANGE?

Climate change refers to long term changes in temperature and weather patterns around the world. While these changes can occur naturally, human activities are accelerating this process significantly.



HUMAN ACTIVITIES

The most damaging human activities are the consumption of coal, oil and gas, which account for most greenhouse gas emissions, the felling of forests and the increase in intensive livestock farming and the use of fertilisers containing nitrogen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CAUSES OF CLIMATE CHANGE

The main cause of climate change is the increase in greenhouse gas emissions such as:

- Carbon dioxide (CO2).
- Methane.
- Nitrogen oxide.
- Fluorinated gases.

SOME NUMBERS

CO2 produced by human activities is the main driver of global warming. In 2020, the concentration in the atmosphere exceeded the pre-industrial level (before 1750) by 48%.

Natural causes, such as changes in solar radiation or volcanic activity, are estimated to have contributed less than 0.1°C to the total warming between 1890 and 2010.

ENVIRONMENTAL IMPACTS

Environmental impacts of climate change include rising global temperatures, more intense storms, melting polar ice caps, food shortage, rising sea levels, increasing drought, loss of species and changing weather patterns.


"PACIFIC TRASH VORTEX"

RISING GLOBAL TEMPERATURES

Almost all land surfaces are experiencing more hot days and heat waves.
Rising temperatures increase heat-related illnesses and can make it more difficult to work and move around. Fires break out more easily and spread more quickly when it is warmer.

MORE INTENSE STORMS

Changes in temperature cause changes in rainfall patterns.

As a result, more intense and frequent storms occur, causing floods and landslides, destroying homes and communities, and costing billions of dollars.

INCREASED DROUGHT

Water is becoming rarer and rarer in more regions. Droughts can cause destructive sand and dust storms that can move billions of tonnes of sand from one continent to another.

Deserts are expanding, reducing the land used to grow food. Many people now face the threat of not having enough water on a regular basis.

RISING OCEANS LEVELS

The ocean absorbs most of the heat from global warming. As a result, ice caps melt and sea levels rise, threatening coastal and island communities.

In addition, the ocean absorbs carbon dioxide from the atmosphere. An increase in carbon dioxide makes the ocean more acidic, a phenomenon that endangers marine life.

LOSS OF SPECIES

Climate change presents risks to the survival of terrestrial and oceanic species.

These risks increase as temperatures rise. Forest fires, extreme weather events, diseases and invasive pests are among the many threats associated with climate change.

Some species will be able to relocate and survive, but others will not.

FOOD SHORTAGE

Climate change and increased extreme weather events are among the reasons behind the global increase in hunger and malnutrition.

Fishing, farming and animal husbandry may be destroyed or become less productive. Heat stress may reduce water and grassland for grazing.


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last two

RENEWABLE ENERGY

One of the main solutions to addressing climate change is the transition to renewable energy such as solar, wind, and hydropower.
These energies produce fewer emissions and are key to a sustainable future.

SOME NUMBERS

In **2023**, renewable energies provided **14.56%** of global primary energy consumption and **30.24%** of global electricity production,

Which in turn consisted of **47.17%** for hydro, **25.87%** for wind, **18.26%** for solar (photovoltaic and thermal) and **8.69%** for the remaining renewable sources (including geothermal, biomass, waste, wave and tidal).

INTERNATIONAL AGREEMENTS

In December 2015, the long-awaited Paris Agreement on Climate Change was signed at the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC), providing a credible framework to achieve decarbonisation, with long-term targets to tackle climate change and a flexible structure based on contributions from individual governments.

INTERNATIONAL AGREEMENTS

The road to decarbonisation is clear and is called the energy transition: the shift from a fossil-fuel-centred energy mix to one with low or zero carbon emissions, based on renewables.

The technologies for decarbonisation are there, they are efficient and must be chosen at all levels. And a major contribution to decarbonisation comes from the electrification of final consumption

MITIGATION STRATEGY

Other mitigation strategies include increasing energy efficiency, reforestation, and changing consumption and production patterns.

Every individual can contribute by reducing their carbon footprint.

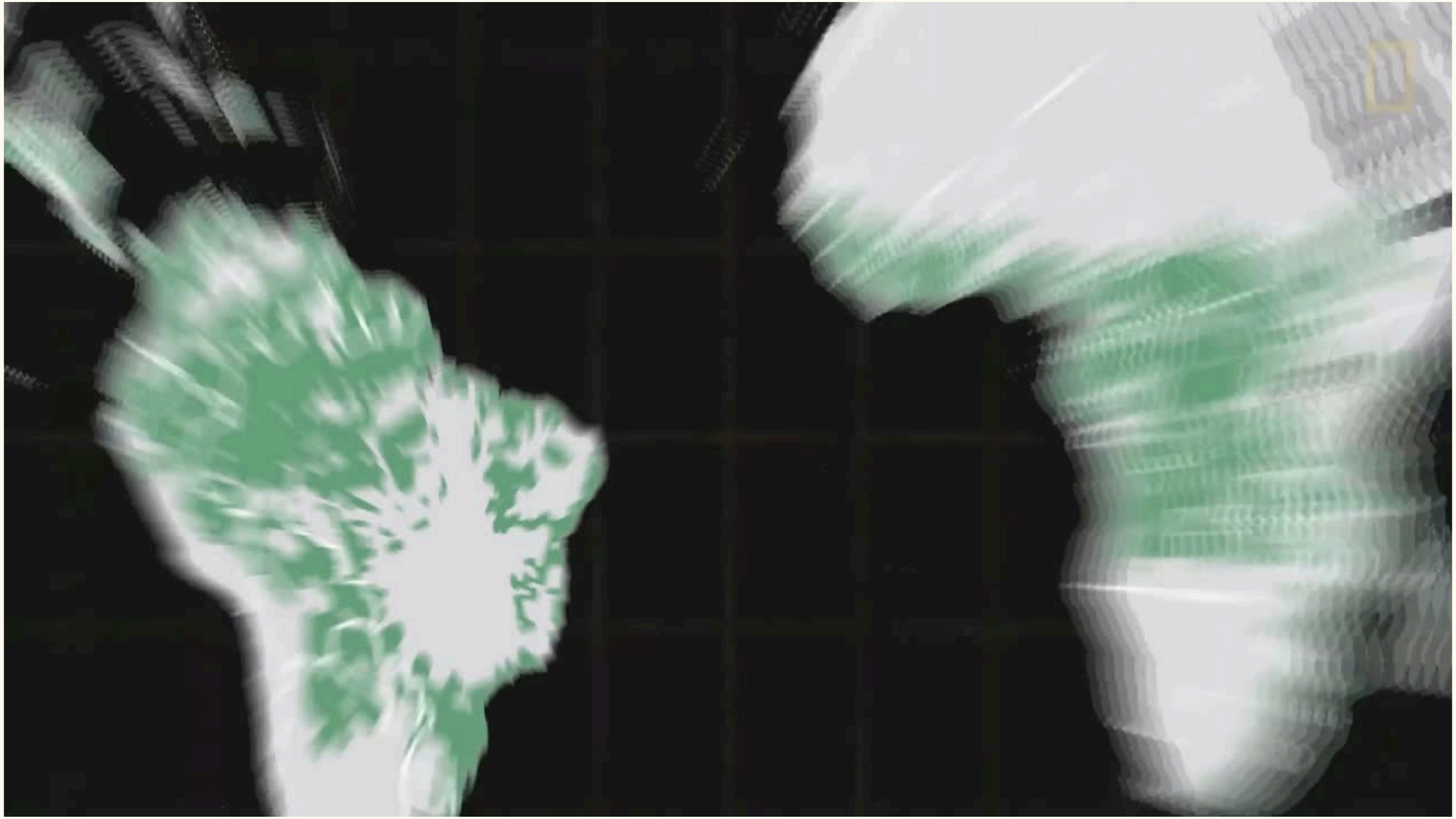
INCREASING ENERGY EFFICIENCY

In the past 40 years, the world's energy use has doubled.
To deal with the problems of running out of fossil fuels (like coal, oil, and gas) and their harmful impact on the climate, we need to focus on two things: using more renewable energy sources and making better use of the energy we already have by creating products and services that use less energy.
Some energy-efficient technologies may cost more at first but can save money over time because they have lower running costs compared to traditional options.

REFORESTATION

Is the act of recreating forests that have been destroyed by man. It is, in practice, a regeneration of vegetation, involving the planting of trees in order to recover hectares of forest area.

The main reasons for the destruction of forests include timber production, forest fires, uncontrolled construction, intensive agriculture and livestock farming.



BUILDING CLIMATE RESILIENT INFRASTRUCTURE

It is possible to design and construct buildings in such a way that cooling, heating and artificial lighting serve a limited purpose, thus helping to reduce overall energy demand.

This is not really new, but as building technology has evolved, this approach has been lost sight of.

HOW FOOD CONTRIBUTES TO CLIMATE CHANGE

- 🌾 Agriculture = ~25% of global greenhouse gas emissions
- 🐄 Livestock = high methane and nitrous oxide emissions
- 🌳 Deforestation for crops & grazing
- 🚚 Long food supply chains = transport emissions
- 🗑️ One-third of all food is wasted

HOW CLIMATE CHANGE AFFECTS FOOD

- 🌪️ Extreme weather = crop failures & livestock losses
- 💧 Droughts and water scarcity
- 🐝 Loss of biodiversity & pollinators
- 🍽️ Rising food prices & growing food insecurity

SOLUTIONS – AT THE PRODUCTION LEVEL

- 🌱 Shift to sustainable & regenerative agriculture
- 🐂 Improve livestock management to cut methane
- 🌳 Stop deforestation and restore ecosystems
- 💧 Use water and soil resources more efficiently

SOLUTIONS – AT THE CONSUMPTION LEVEL

- 🍎 Eat more plant-based, seasonal, and local foods
- 🛒 Reduce food waste at home & in supply chains
- 📉 Cut down on red meat and ultra-processed foods
- 🧠 Educate consumers on climate-friendly diets

POLICY & SYSTEM-LEVEL SOLUTIONS

- 💡 Support climate-smart agriculture innovation
- 📜 Enforce environmental and food policy reform
- 🏫 Promote climate education & awareness
- 💰 Invest in sustainable food infrastructure


Massachusetts Institute of Technology

CLIMATE CHANGE IS A GLOBAL CHALLENGE THAT REQUIRES COLLECTIVE ACTION.

BY RAISING AWARENESS AND ADOPTING SUSTAINABLE MEASURES, WE CAN PROTECT THE PLANET FOR FUTURE GENERATIONS.


THANK
YOU