



Image 1

Climate Change Mitigation

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**Hochschule
für nachhaltige Entwicklung
Eberswalde**

Agenda



1. Definition
 2. Strategies for Mitigation
 - 2.1. Reducing GHG Emissions
 - 2.2. Protecting & Enhancing Carbon Sinks
 - 2.3. Implementing Technologies
 - 2.4. Earth 4 All - A Survival Guide for humanity
 3. Status Quo
 - 3.1. Emissions
 - 3.2. International Emissions
 - 3.3. Emissions by Sector
 - 3.4. Mitigation: Renewable Energies
 - 3.5. Mitigation: Climate Finance
 4. Challenges in Global Mitigation Efforts
 5. Climate Justice
 - 5.1. Definition
 - 5.2. Case Study: Saul Luciano Lliuya vs. RWE
 - 5.3. Challenges
 - 5.4. Solutions
 6. Conclusion
- List of sources
- List of illustrations

1. Climate Change Mitigation

“

Mitigation refers to the attempt to "protect" the global climate and curb human-induced warming. This includes all strategies and measures that contribute to reducing or preventing greenhouse gas emissions.

”

(Solomon et al. 2007)

2. Strategies for Mitigation

Reducing GHG Emissions

- Promote sustainable land use, reforestation, and regenerative agriculture (FAO)
- Reduce methane emissions from sources such as landfills, agriculture (livestock), and fossil fuel extraction
- Transition to a circular economy (WEF)
- Establish carbon taxes or cap-and-trade systems to put a price on carbon emissions (WB)

Protecting & Enhancing Carbon sinks

- naturally absorb and store carbon dioxide (CO₂) from the atmosphere.
- Protecting and enhancing these sinks is crucial for climate mitigation (FAO)
- strict policies to prevent land clearing, Reforestation & afforestation (FAO)
- Regenerative agriculture, wetland conservation
- Protect mangroves, seagrass meadows, and salt marshes (The Nature Conservancy)

2. Strategies for Mitigation

Implementing technologies

- Development and deployment of technologies such as green hydrogen and fuel cells
- Expanding solar, wind, hydro, and geothermal power
- Improving building insulation, LED lighting, and smart grids
- Carbon Capture and Storage (CCS), Green roofs & urban forests, Carbon storing building materials (IPCC)
- Sustainable Transportation
- Urgent action is needed to ensure that global warming stays as much below 2°C as possible (Max-Planck-Gesellschaft)
- faster rollout of solar and wind energy could provide 27% of the emissions cuts needed
- Reducing deforestation, increasing reforestation and improved forest management could bring another 20% cut (UN)

Earth 4 All - A Survival Guide for Humanity

- contributes to **climate mitigation** by advocating for deep societal and economic transformations to reduce greenhouse gas emissions and prevent catastrophic climate change

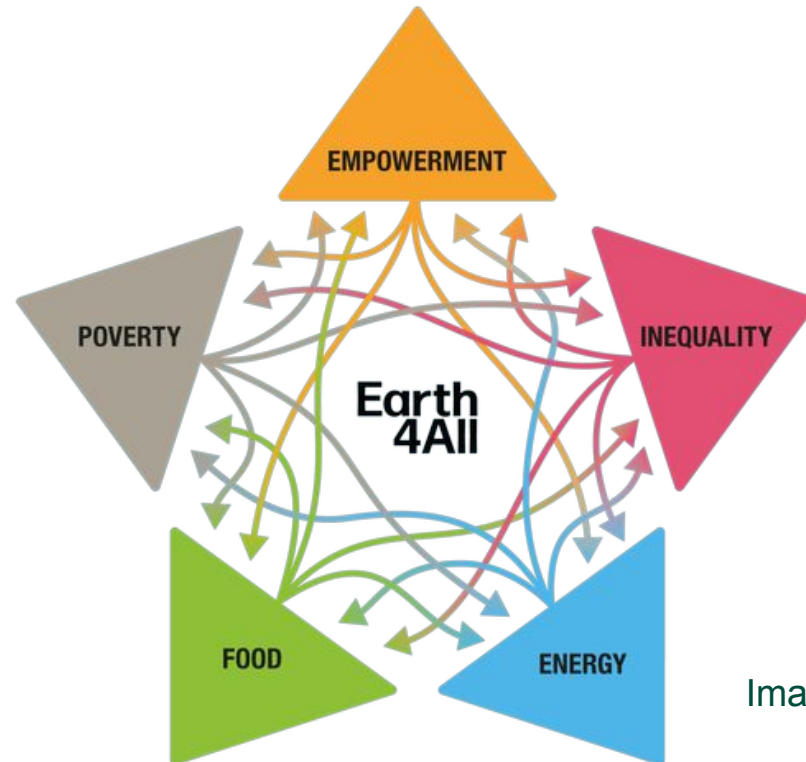


Image 2: Earth for All

3. Status Quo

International Emissions

(b) Historical cumulative emissions by region

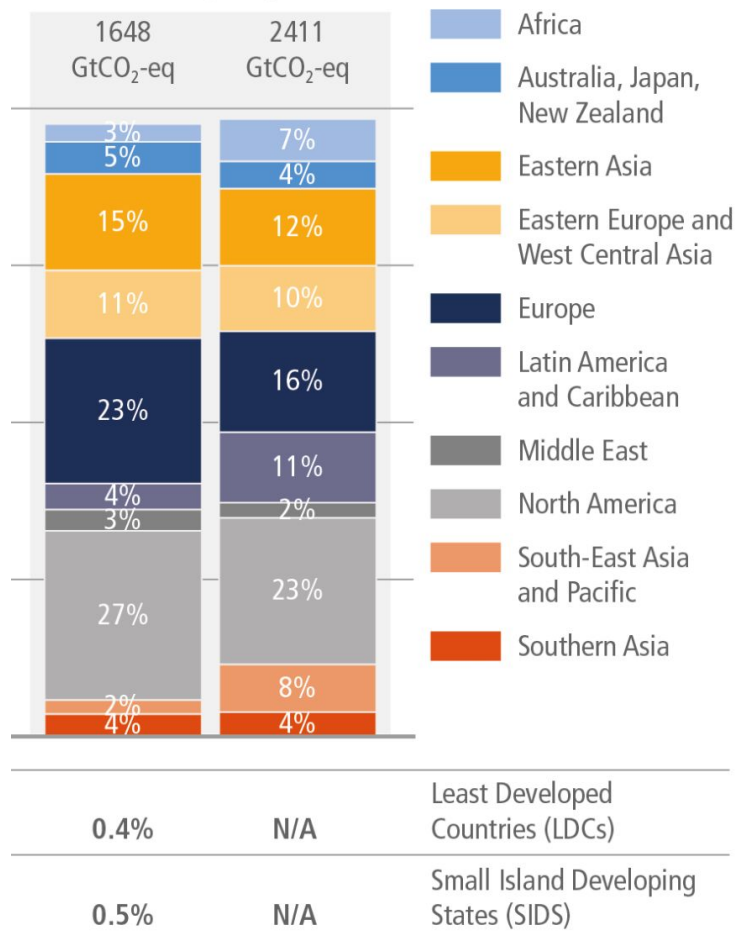


Image 3: Historical Emissions

Distribution of fossil carbon dioxide emissions worldwide in 2023, by select country

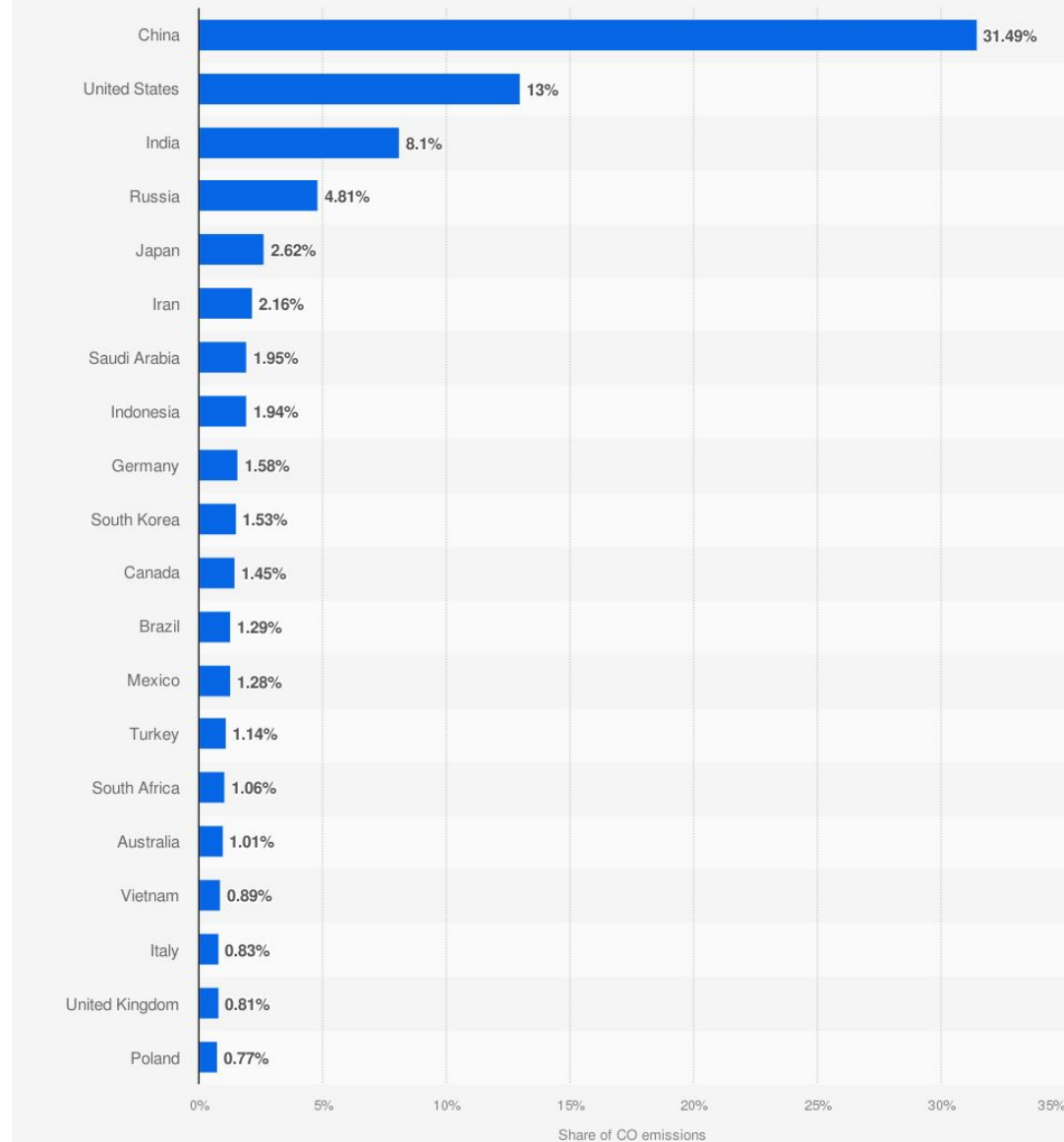
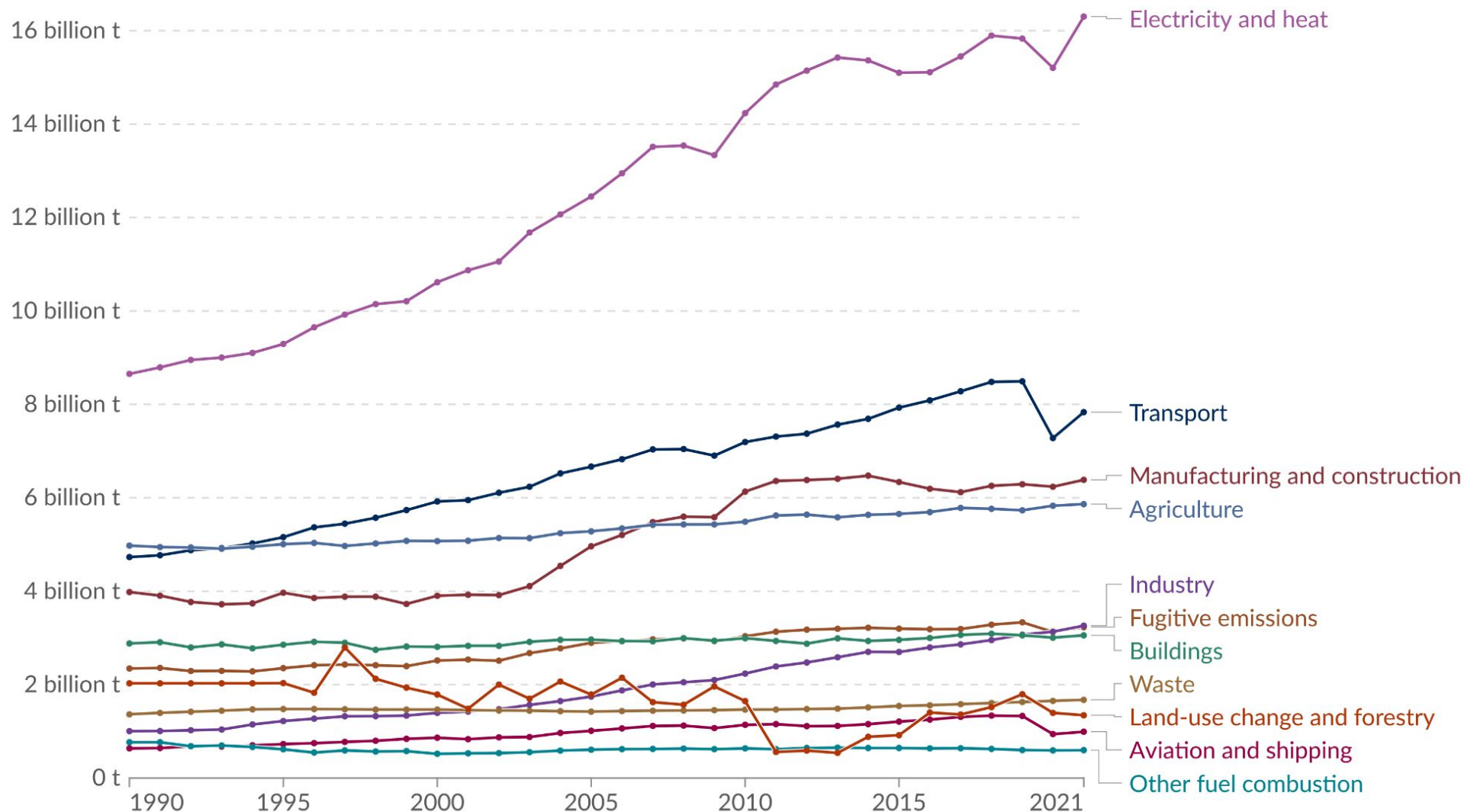


Image 4: Emissions by Country

Greenhouse gas emissions by sector, World

Greenhouse gas emissions¹ are measured in tonnes of carbon dioxide-equivalents² over a 100-year timescale.



Data source: Climate Watch (2024)

OurWorldinData.org/co2-and-greenhouse-gas-emissions | CC BY

Note: Land-use change emissions can be negative.

Image 5: Emissions by Sector

Status Quo: Mitigation

Climate Finance

Climate finance flows and needs in context

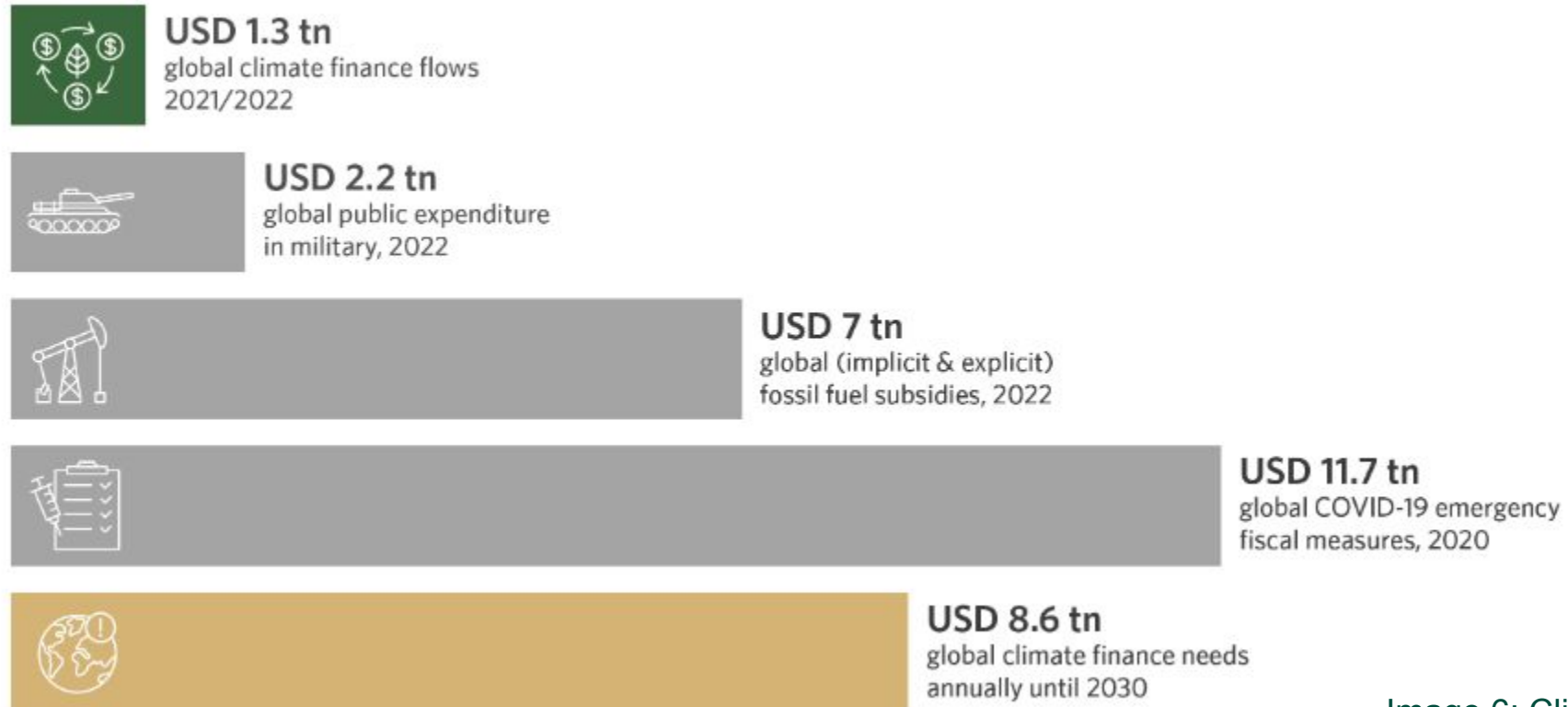


Image 6: Climate Finance Gap

Status Quo: Mitigation

Climate Finance

Figure 9: Climate finance flows in key mitigation sectors, finance needs and mitigation potential

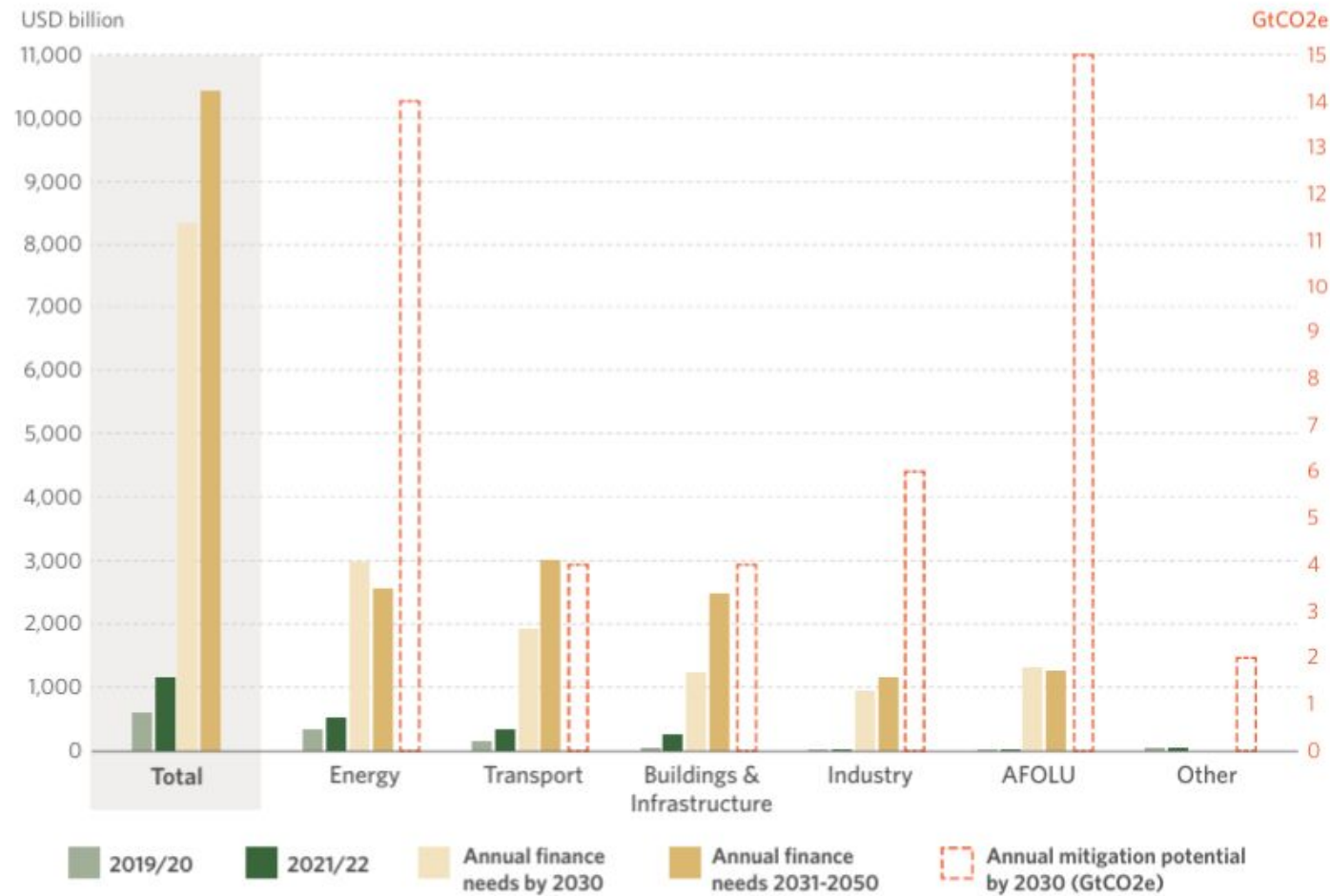


Image 7: Climate Finance by Sectors

Status Quo: Mitigation

Policies and laws addressing mitigation have **consistently expanded** since IPCC AR5.

→ In many countries there is **enhanced energy efficiency, reduced rates of deforestation and accelerated technology deployment**, leading to **avoided and in some cases reduced or removed emissions**

But: These reductions have only partly offset global emissions growth (IPCC)

→ **Insufficient Emission Reduction Commitments:** Current national pledges are inadequate, potentially leading to a global temperature rise of 2.6°C to 2.8°C (UN)

Challenges in Global Mitigation Efforts

- **Fragmented Governance:** weak connections and competition for resources
- **Climate Finance Gap:** need for substantial investments, estimated at \$1-2 trillion annually, to support mitigation efforts, especially in developing countries. (UN)
- **Lack of political will** for ambitious climate goals
- **Lobbying of Fossil Fuel Industries**
- **Climate Change Denial**
- **Global inequality**
- **Climate Justice:** Poorer nations are the most affected by climate change but often lack financial capacity for large scale mitigation

Climate Justice

Definition

Climate justice sees **climate change as an ethical and social issue**. It highlights the unfair distribution of both **responsibility** and **impacts**:

- **Poorer countries suffer the most** from climate change but have contributed the least.
- **Industrialized nations' fossil fuel economies** drive global warming.
- Climate change **amplifies social inequalities** related to wealth, ethnicity, gender, and access to resources. (Yale, DGAP)



Image 8: Climate Justice Now

Climate Justice

Case Study: Saul Luciano Lliuya vs. RWE (Climate case chart)



Image 9: Saúl Luciano Lliuya

Climate Justice

Challenges

**Unequal
Responsibility**

**Legal & political
Barriers**

**Economic
Inequality**

**Local community
rights**

Climate Justice

Solutions

Unequal Responsibilities

- **Problem:** The Global North caused most emissions, while the Global South suffers the worst impacts
- **Solution:** Fair climate finance, debt relief, and carbon border taxes to ensure accountability (UNFCCC, IMF)

Legal & Political Barriers

- **Problem:** Weak enforcement & legal loopholes let big polluters avoid responsibility
- **Solution:** Stronger climate litigation, binding agreements, and corporate accountability laws (Climate Litigation Network, OECD)

Climate Justice

Solutions

Economic Inequality

- **Problem:** Developing countries lack funding for a fair transition
- **Solution:** More investments in green energy, just transition policies, and expanding climate funds

(World Bank)

Local Community Rights

- **Problem:** Indigenous communities protect 80% of biodiversity but face displacement
- **Solution:** Recognizing land rights, supporting Indigenous-led conservation, and using traditional knowledge in policies

(UN, IPCC, UNDP)

Conclusion

- to mitigate climate change, deep emission reductions are necessary
- recent climate efforts have had effects but GHG emissions are still growing
- global challenges like the climate finance gap, the lack of global coordination, dependency on fossil fuels and global inequality need to be addressed
- efforts to reduce greenhouse gas emissions must be implemented in a way that is fair and equitable, addressing historical responsibilities and social inequalities

“Realizing the mitigation potentials, even partially, requires **rapid and unprecedented policy action globally**, employing a whole-of-government approach that emphasizes sustainable and climate-resilient development, effectively addresses barriers and catalyses public and private sector action” (UN)

Discussion

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List of Illustrations

Image 1:

https://shopequo.com/cdn/shop/articles/What_Is_Climate_Change_Causes_Impact_on_Humans_and_Animals.png?v=1698979509&width=1600

Image 2 Earth for All: https://www.clubofrome.at/wp-content/uploads/2022/09/E4A_Interlinkage_-_Feb_2022-1024x1024.png

Image 3 Historical Emissions: <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-2/> Figure 2.10, Access on 02/20/25

Image 4 Emissions by Country: <https://www.statista.com/statistics/271748/the-largest-emitters-of-co2-in-the-world/> , Access on 03/20/25

Image 5 Emissions by Sector: <https://ourworldindata.org/emissions-by-sector>, Access on 03/20/25

Image 6 Climate Finance Gap: <https://www.climatepolicyinitiative.org/publication/top-down-climate-finance-needs/>, Access on 03/20/25

Image 7 : Climate Finance by Sectors:

<https://www.convergence.finance/resource/global-landscape-of-climate-finance-2023/view>, Access on 03/20/25

Image 8 Climate Justice Now: <https://yaleclimateconnections.org/2020/07/what-is-climate-justice/> Access on 03/20/25

Image 9 Saúl Luciano Lliuya:

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQdcNN9iQe2SYY4bK2LCCjVQYDMmIXXhUtLdtkuP9fnDMR-laM5x5hc8woosv-4ceRvJhWcvVg_SMjnalGkkVpxYg