Climate Change

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# Abstract

Climate change has been coined the existential threat of our time. To derive appropriate interventions in development practice requires good data governance and precise measurement. This chapter explores three main indicators relating to ideas of mitigation, adaptation, and resilience through finance SDG Goal 13’s indicator framework, established by the United Nation Climate Change proceedings (UNFCCC).

The chapter begins with an overview of climate change history, key players, and the relationship to development through international processes. The chapter than dives into the outlined indicators illustrating dynamics within them such as disaster and hazard data not being disaggregated by exclusively climate-related events in SDG target 13.1.1, illustrating the ways that countries can obfuscate their responsibility for climate change through their representations of existing emissions data in SDG target 13.2.2, and the data deprivations and overrepresentation politics of climate finance data and the surrounding rhetoric in SDG target 13.a.1.

Employing a critical lens on current data issues to further assess the degree of alignment within climate priorities in development practice, this chapter sheds light on how proper data collection can empower meaningful climate solutions. Ultimately, the reader should understand how the use of data can either make or break climate action by understanding how key players contributing to the intensification of climate change impacts uphold data deprivations, misuse of information, and the lack of clear definitions thus creating unequal conditions in climate and development. By critically identifying the politics of data, we can assess what information is needed and what questions to ask to build international trust and momentum on climate change that does not leave behind the perspectives of those being disproportionately impacted by climate change.

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# Hook

Possible Hook: Youth statements about action/inaction at UNFCCC/related meetings

* Severn 1992 Rio Earth Summit (1992): <https://www.youtube.com/watch?v=JGdS8ts63Ck>
  + Coming up here today, I have no hidden agenda. I am fighting for my future. Losing my future is not like losing an election, or a few points on the stock market.
  + I am here to speak for all generations to come. I am here to speak – speak on behalf of the starving children around the world whose cries go unheard. I am here to speak for the countless animals dying across this planet, because they have nowhere left to go. I am afraid to go out in the sun now, because of the holes in our ozone. I am afraid to breathe the air, because I don’t know what chemicals are in it.
  + Parents should be able to comfort their children by saying, “Everything’s going to be alright; it’s not the end of the world, and we’re – and we’re doing the best we can.” But I don’t think you can say that to us anymore. Are we even on your list of priorities?
  + My dad always says, “You are what you do, not what you say.” Well, what you do makes me cry at night. You grown-ups say you love us. But I challenge you, please, make your actions reflect your words.
* Anjali COP17 (2011): <https://www.youtube.com/watch?v=Ko3e6G_7GY4>
  + “I speak for more than half the world’s population. We are the silent majority. You’ve given us a seat in this hall, but our interests are not on the table”
  + “You’ve been negotiating all my life. In that time, you’ve failed to meet pledges, you’ve missed targets, and you’ve broken promises. But you’ve heard this all before.”
* Greta COP 24 (2018): <https://www.youtube.com/watch?v=VFkQSGyeCWg>
  + “You say you love your children above all else, and yet you are stealing their future in front of their very eyes.”
  + “Until you start focusing on what needs to be done rather than what is politically possible, there is no hope. We cannot solve a crisis without treating it as a crisis.”
  + “We need to keep the fossil fuels in the ground, and we need to focus on equity. And if solutions within the system are so impossible to find, maybe we should change the system itself.”
  + “We have not come here to beg world leaders to care. You have ignored us in the past and you will ignore us again.”
* Related, but not UNFCCC related: <https://www.kathyjetnilkijiner.com/united-nations-climate-summit-opening-ceremony-my-poem-to-my-daughter/>

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# Introduction

While every SDG is related to climate change (they are the *sustainable* development goals, after all), this chapter will be focusing on the data and politics behind specific targets and indicators within Goal 13: “Take urgent action to combat climate change and its impacts” or in short-hand, Climate Action\*. As you may notice, unlike other SDGs there is an asterisk next to Climate Action\* for SDG Goal 13. This is “acknowledging that the United Nations Framework Convention on Climate Change (UNFCCC) is the primary international, intergovernmental forum for negotiating the global response to climate change.”[[1]](#endnote-2) So, to help you understand the importance of the specific subset of indicators we’ll be exploring together in this chapter (see Table 13.1), we’ll quickly review some of the key players, events, and processes that have informed the climate conversation to date and will determine what climate action can and will look like both within the SDGs and beyond.

Table 13.1: SDG targets and indicators as focus of this chapter[[2]](#endnote-3)

| Target | Indicator |
| --- | --- |
| 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries | 13.1.1: Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population |
| 13.2: Integrate climate change measures into national policies, strategies and planning | 13.2.2: Total greenhouse gas emissions per year |
| 13.a: Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible | 13.a.1: Amounts provided and mobilized in United States dollars per year in relation to the continued existing collective mobilization goal of the $100 billion commitment through to 2025 |

## What is Climate Change?

Before diving into our exploration of the existing actors and pathways for addressing climate change, we will briefly go through some key terms and concepts that will frame the way you understand the timeline of events.

First, what is climate change and more specifically what does ***anthropogenic*** mean? The planet is experiencing an unnatural concentration of greenhouse gasses in the atmosphere caused by human activity, or anthroponic. According to a 2018 report by the Intergovernmental Panel on Climate Change (IPPC), “Human activities are estimated to have caused approximately 1.0C of global warming above pre-industrial levels, with a *likely* range of 0.8C to 1.2C.”[[3]](#endnote-4) The spike in concentrations of greenhouse gasses has been identified to be driven by human activity is caused by burning hydrocarbons (coal, natural gas) for everything from energy and transportation to new age farming practices (tilling, industrializing meat production), and even the technologies we use every day like our computers and cell phones.

As noted in the IPCC, the industrial revolution is where our story truly begins. When we relate development and climate change, it is helpful for us to think about how colonialism, especially the violent extraction of resources from colonies bolstered by racism, classism, and sexism, allowed for a rapid industrialization process in countries that we now call *developed* leaving the pillaged colonized nations as *developing* or *underdeveloped*.[[4]](#endnote-5) **[illustrative example to be added that shows extraction from X country to be used in Y country to accumulate wealth/develop; this former colony depends on aid from former empire who is big emitter]**

Recognizing that climate change has been created and continues to worsen because of the actions of rich, developed countries while the communities that have caused the least of the emissions or other contributions are feeling the harshest impacts, advocates have used the frame *climate justice* to center the voices and experiences of those pushed to the margins.[[5]](#endnote-6) **[illustrative example to be added, such as lowest emitting nations feeling the most violent impacts (former colonies and current colonies see: Puerto Rico)]**

To further understand how we got to where we are today with current climate change goals within the SDGs and the associated UN processes, we will take you on a trip through the last 50 years of climate change and development history.

**[Pull out box 13.xx]**

When talking about climate change, two main dimensions come up in this conversation: mitigation and adaptation. These two dimensions are usually talked about in terms of solutions or responses to their associated issues. To familiarize ourselves with these concepts, we will look into their definitions and illustrate a few examples.

UNFCCC defines climate change mitigation as “the human intervention to reduce the sources or enhances the sinks of greenhouse gases.”[[6]](#endnote-7) Some these interventions include national-level policies to reduce GHG emissions by regulating various sectors, such as industry or transportation. Another mitigation intervention would be individuals reducing their consumption of fossil fuels or GHG-emitting activities. Lastly, increasing the capacity of carbon sinks that absorb CO2 from the atmosphere through planting trees or implementing other technologies that capture and store Carbon is an example of climate change mitigation.

Climate change adaptation, on the other hand, is defined as the responses to either real or expected climate change-related events that reduce the harms from these effects or produces potential opportunities.[[7]](#endnote-8) Some examples of climate change adaptive responses are national adaptation plans (NAP), projects that protect communities from sea-level rises, and agricultural policies that respond to persistent droughts.

Finally, the increasing climate-related events have caused much harm to many communities around the world. These impacts brought on a global conversation on issues of loss and damage due to climate-related events.[[8]](#endnote-9) **[MISSING EXAMPLES OF LOSS AND DAMAGE]**

In order to fully get the picture of how these concepts and terminologies came about in the conversation on global development and climate change, it is important the history of actors and frameworks that shaped the ideas and translated **(?; didn’t want it to sound too academese)** these concepts into the indicators that we will later talk about more in-depth.

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# Global Climate Action: An Abbreviated History

By the mid-1970s, meteorologists and other atmospheric scientists began to express concern, following many forums for sharing scientific findings on climate change, such as the 1967 Global Atmospheric Research Program.[[9]](#endnote-10) At the time, the conversation largely focused on rising pollution-levels and emissions-related global warming, with the understanding of climate change that we have today coming later.[[10]](#endnote-11) As evidence mounted and concerns grew, scientists made a startling discovery in 1985: there was a hole in the o-zone layer over the South Pole.[[11]](#endnote-12) This changed the entire political landscape in regards to thinking about the environment, but more so it provided a clear example of how humans can affect the environment through our social and economic systems- including development.[[12]](#endnote-13)

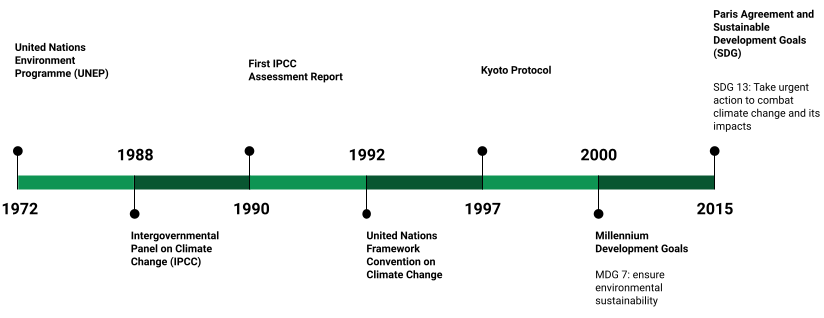


Figure 13.1: major actors and frameworks in climate change and development

To address the emerging dynamics, the Intergovernmental Panel on Climate Change (IPCC) was established in 1988. The IPCC’s official charge is to “provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.”[[13]](#endnote-14) Created by the United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO) and confirmed in the United Nations General Assembly (UNGC) that year. From its confirmation at the UNGA, Resolution 43/53, the IPCC was tasked to “was to prepare a comprehensive review and recommendations with respect to the state of knowledge of the science of climate change; the social and economic impact of climate change, and potential response strategies and elements for inclusion in a possible future international convention on climate.”[[14]](#endnote-15) Since then, the IPCC has set forth to create knowledge across countries, disciplines, and processes by providing technical, socio-economic, science-based reports that are “neutral, policy-relevant but not policy-prescriptive.”[[15]](#endnote-16)

What is important to understand here is just how important the creation of the IPCC was in bringing climate change to the global political stage. Think of how controversial climate change and humankind’s role in creating it is today in modern politics. Now imagine how much more difficult it would be to convince countries, companies, and people to act without the science behind it. Impossible, right? In 1990, the IPCC published their first report: the FAR, or First Assessment Report, which focused on the physical sciences of climate change and the first time that emissions data was collected with country-level disaggregation.[[16]](#endnote-17)

Coming out of the FAR was an increased urgency to address sustainability, development, and climate change at the international level. Thus, only two short years later, in 1992 the United Nations Convention on Environment and Development held what is colloquially known as the “Rio Earth Summit.” From this meeting emerged three new processes to protect the environment: The United Nations Framework Convention on Climate Change (UNFCCC), the Convention to Combat Desertification (UNCCD), and the Convention on Biological Diversity (UNCBD). When thinking specifically about development and the SDGs, the UNFCCC is going to be the most important process for you to understand. Lucky for you it is super straightforward (Just kidding. It is very complex and nuanced, but we’ll just introduce you to some of the elements that will be most important for you to know for this chapter).

The UNFCCC is charged with the task “to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system, in a time frame which allows ecosystems to adapt naturally and enables sustainable development.”[[17]](#endnote-18) Since 1992, this has meant the creation of a complex system of parallel processes that meet annually at what is known as the Conference of the Parties or COPs. This process, as noted by the SDGs, is the primary forum for addressing climate change and therefore its importance cannot be understated. But, like many of the other processes you have read about, the UNFCCC has long struggled to create the meaningful action that the countries most impacted by climate change, mostly developing countries and small island states, need. Behind these difficulties are conflicts relating to two key frameworks that are foundational to understanding the slow progress in addressing climate change: the polluters pay principle **[will be in a pull out box w/ definition]** and the right to develop **(see ch.XYZ, page XYZ)**.[[18]](#endnote-19) We’ll explore these dimensions in relation to two of the most important climate proceedings and treaties to date: the Kyoto Protocol (COP3) and the Paris Agreement (COP21). A few of the other notable COPs for our indicators include Bali (COP13), Copenhagen (COP 15), Durban (COP17), Warsaw (COP19), **(See Table 13.xx for more about these meetings’ outcomes)**.

If you are familiar with climate change policy, you will no doubt have heard about the Kyoto Protocol. Agreed upon during the 1997 UNFCCC meetings in Kyoto, Japan, this was the first international process that attempted to address climate change, specifically to reduce the greenhouse gas(GHG) emissions of developed countries as rapidly as possible.[[19]](#endnote-20) From 1997-2009, Kyoto was *the* mechanism with the goal that developed countries would reduce their overall emissions to 5% from their 1990 levels— and what’s more, it was legally binding meaning that if countries did not meet their targets they could be fined. By the mid-2000s, the impacts of climate and the related emissions had gotten more clear and even more dire. Lord Nicholas Stern, a British economist, said of the new understanding of the science “emissions are growing faster than we thought, the absorption capacity of the planet is less than we thought, the probability of high temperatures is likely higher than we thought, and some of the effects are coming faster than we thought.”[[20]](#endnote-21) Despite the alarming new IPCC reports and increasing climate-related disasters, such as Hurricane Katrina in the United State in 2007, developed countries were not following through with their commitments to the Kyoto Protocol to reduce their GHG emissions. What gives? A simple example of this breakdown was encapsulated during the Copenhagen COP16: Developed countries did not want to adopt what they saw as “restrictive” targets on limiting their emissions by 2020 and developing countries continued to assert their right to develop.[[21]](#endnote-22) **[I can add more or less here]**

This breakdown led to the need to rebuild trust and figure out how to develop a process that could involve as many parties as possible in the global pursuit of lowering emissions and aiding in rapid adaptation, especially for developing countries. Thus, over the next few years the framework that led to the creation of the Paris Agreement in 2015 began.[[22]](#endnote-23) The Paris Agreement made some notable shifts from the Kyoto Protocol, namely regarding its voluntary nature (meaning that countries would not be required to take any actions, the idea being that they would want to take action as a matter of good political will) and the shift in the emissions targets. If you remember, the Kyoto Protocol mandated that exclusively developed countries emit 5% less than 1990 GHG levels; the Paris Agreement makes the call for all countries to reduce overall GHG emissions to 1.5 degrees Celsius above pre-industrial levels. What? You thought it was 2 degrees? The 1.5 vs. 2 degrees story is a great segue into talking about our key players.

## Key Players

In addition to individual countries, there are a slew of key players that it’s important to familiarize yourselves with. Within the UNFCCC there are nine non-party stakeholder groups called *constituencies* including, Business and Industry NGOs (BINGO), Environmental NGOs (ENGO), Farmers, Indigenous peoples organizations (IPO), Local government and municipal authorities (LGMA), Research and independent NGOs (RINGO), Trade union NGOs (TUNGO), Women and Gender, and Youth NGOs (YOUNGO).[[23]](#endnote-24) While these constituencies are the formal pathway to engagement in the UNFCCC process, each one is made up by membership from dozens if not hundreds of different organizations, individuals, communities, researchers, businesses, and interest groups. Some of the more important civil society actors include the Climate Action Network (CAN) which has regional organizations that are made up of regional NGOs. There is the Climate Justice Alliance which is made up of individuals and organizations that advocate against business as usual in the negotiations, having been created a divide in approaches to advocacy between big green groups and justice-oriented groups became increasingly evident. **[Do we want to talk about G77+, AOSIS, LDCs, the African Group, etc?]**

**[more details will be adding, still compiling civil society accounts]** 1.5 degree target was set after intense pressure from civil society groups and the Alliance of Small Island States (AOSIS).[[24]](#endnote-25) In 2018, the Intergovernmental Panel on Climate Change released a special report that detailed, “climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5C and increase further with 2C.”[[25]](#endnote-26) **[related images** [**https://www.flickr.com/photos/wedoworldwide/23010507764/in/album-72157661512826379/**](https://www.flickr.com/photos/wedoworldwide/23010507764/in/album-72157661512826379/) **;** [**https://www.flickr.com/photos/wedoworldwide/23270745029/in/album-72157661512826379/**](https://www.flickr.com/photos/wedoworldwide/23270745029/in/album-72157661512826379/)**]**

## How Climate Change Processes Relate to Development

Under the Kyoto Protocol, the Clean Development Mechanism (CDM) was created; a fund for developing countries to access for completing “emissions-reduction projects” and adaptation efforts which would be supported by a carbon markets scheme related to the emission reductions of developed countries, as per their responsibility to the Kyoto Protocol.[[26]](#endnote-27) While this is not the most relevant aspect of the Kyoto Protocol to our upcoming discussion on finance, vulnerability, or emission data, the CDM is one of the few connections to a different UN process: Millennium Development Goals (MDGs), agreed upon in 2000. The precursor to the Sustainable Development Goals, the MDGs did not explicitly address climate change. Goal 7 to “Ensure Environmental Sustainability” included a few markers referring to the importance of mitigation and adaptation actions, but for the most part MDG goal 7’s targets were linked to the protection of resources and biodiversity.[[27]](#endnote-28)[[28]](#endnote-29) More specifically, Target 7.A called to “Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources,” but it was reportedly more through Goal 8’s aim to transfer technology that linked the existing work of the CDM to the MDGs. The exclusion of climate change from the MDGs played a large role in the re-framing and movements toward the SDGs according to a “gaps” report published by the MDGs:

The year 2015 is a milestone for global action: we will come to the end of the time frame in which we have been guided by the MDGs; we are launching a transformative development agenda, including a set of sustainable development goals (SDGs); and we are aiming for a meaningful and universal agreement on climate change. The transition from the MDGs to the SDGs presents a once-in a-generation opportunity to advance prosperity, secure the planet’s sustainability for future generations, and unlock resources for investments in education, health, equitable growth and sustainable production and consumption.[[29]](#endnote-30)

Coming into prominence in 2015, the SDGs and the Paris Agreement are both hailed as important, game-changing processes for international action on some of the most pressing global issues of today. Simultaneously, both processes are critiqued as upholding neoliberal values (Refer to page XYZ), not having reliable or measurable outcomes, and catering to the desires of the worlds’ historic emitters and biggest economies over those of developing countries and those facing the burden of climate change. While we interrogate the data related to SDG Goal 13 as managed by the UNFCCC, ask yourself the following questions: who collects this information, who benefits from it, and why is it measured (or not) the way that it is?

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# Data Landscape

## GHG Emissions

Honing in on indicator 13.2.2 “total greenhouse gas emissions per year” under the target of 13.2 which calls to “Integrate climate change measures into national policies, strategies and planning” will help us better understand the narrative that this data is telling. By collecting data on GHG emissions it is possible to understand our anthropogenic emissions rates, to ensure we make appropriate emissions reductions goals, and are hitting the interim targets necessary to meet the goals. The data for this indicator is self-reported per country by means of self-interrogation and calculation of greenhouse gas emissions using a framework and disaggregation provided by the UNFCCC. Once calculated and collected, the national GHG inventories are then submitted to the Climate Change secretariat.

There are two frameworks for data collection and reporting methodologies defined for Annex and Non-Annex countries because. This distinction is generated because even though the countries are formally equal in the United Nations climate negotiations it is recognized that, “their contribution to greenhouse gas (GHG) emissions, development needs, and vulnerability to climate change vary greatly.”[[30]](#endnote-31) Thus within the UN Framework Convention on Climate Change (UNFCCC), ‘common but differentiated responsibilities and respective capabilities’ (CBDR-RC) were acknowledged through distinctions such as the Annex vs Non-Annex designation." Annex I Parties were committed to adopting national policies and measures with the non-legally binding aim to return their greenhouse gas (GHG) emissions to 1990 levels by 2000. The group is largely like the Annex B Parties to the Kyoto Protocol that also adopted emissions reduction targets for 2008–2012. By default, the other countries are referred to as Non-Annex I Parties."[[31]](#endnote-32)

Additionally, there are Annex 2 countries that “have a special obligation to provide financial resources to meet the agreed full incremental costs of implementing measures mentioned under Article 12, paragraph 1. They are also obliged to provide financial resources, including for the transfer of technology, to meet the agreed incremental costs of implementing measures covered by Article 12, paragraph 1 and agreed between developing country Parties and international entities referred to in Article 11 of the UNFCCC. This group of countries shall also assist countries that are particularly vulnerable to the adverse effects of climate change.”[[32]](#endnote-33) The main difference in that “Non-Annex I Parties (developing countries) are not required to submit a separate annual greenhouse gas inventory, and their national communications are not subject to in-depth reviews.”[[33]](#endnote-34) It is recognized that many “developing countries still face reporting challenges, notably the least developed countries (LDCs), which in view of their lack of resources are not required to submit their national communications within a specified period.”[[34]](#endnote-35)

The framework to collect the metadata for 13.2.2 consists of required disaggregation of reported data by both economic sector and type of gas, and by two distinct scopes of emissions definitions, with and without land use change and forestry (LULUCF). “The land use sector comprises land use, land use change and forestry (LULUCF) and agriculture, sometimes referred to collectively as agriculture, forestry and other land use (AFOLU).”[[35]](#endnote-36)

The UNFCCC’s data collection methodology accounts for emissions by these two distinct frameworks because of the complex relationship and unclear boundary between anthropogenic and non-anthropogenic **sources** and **sinks** and “unlike other sectors, land use includes both emissions (source) and removals (sinks) of CO2. For many developed countries forest land is a net sink, although for a few it constitutes a net source.”[[36]](#endnote-37) It is important to remember that “the exchange of greenhouse gases between land and the atmosphere takes place regardless of human activities, but can also be impacted by anthropogenic activities, i.e. the land reservoir of carbon can be increased or decreased due to human activities within the limits of available land area, nutrients, precipitation and wind which all determine boundaries for sequestration of CO2.” Additional data collection issues arise due to the difficulty of trying to “distinguish causal factors in the land sector that result in emissions or removals. For example, emissions from fires may originate from either natural cause (e.g. climate cycles, lightning), or indirect and direct human causes (e.g. past forest harvest activities, unintended spread of deliberately set fires or, in some parts of the world, climate change), or a combination of causes.”[[37]](#endnote-38)

A source is a source of greenhouse gases molecules into the atmosphere such as a coal fired power plant burning coal and the emissions from the burn are a source of greenhouse gasses to the atmosphere where a sink is something that removes greenhouse gases from the atmosphere, such as a tree via photosynthesis removes carbon from the atmosphere.

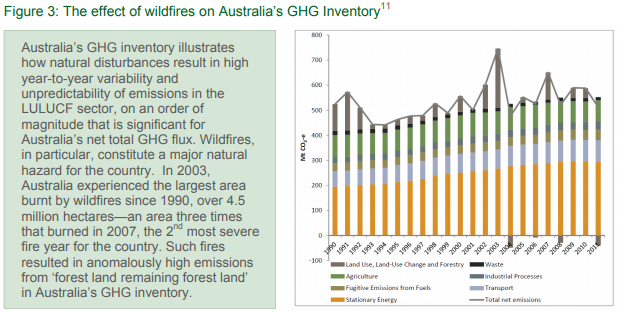


Figure 13.2: Example of text box with figure[[38]](#endnote-39)

The motivation behind the required disaggregation of data by gas type is because of the variety of greenhouse gasses, such as carbon dioxide, methane, and nitrous oxide, their varied global warming potentials, and the various ways that each molecule cycles through the earth’s systems. For example, carbon cycles through the atmosphere and organic matter through what is known as the carbon cycle, via plants and animals’ respiration, humans burning organic matter for energy, wildfires, just to name a few. Understanding how much methane is emitted, unique from other gasses, could empower sequestration for that gas. The methodology provided by the UNFCCC to report “total GHG emissions are such that to calculated as the sum of emissions of direct GHGs: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF6) and nitrogen trifluoride (NF3), measured in units of CO2-equivalent, by using a common weighting factor, the so-called Global Warming Potentials (GWP).”[[39]](#endnote-40) The weighting of emissions based on its global warming potential is an important step in the collection process due to the dissimilar warming impact that each greenhouse gas molecule has. For example, one molecule of methane has the potential to warm the atmosphere four times higher than a molecule of carbon dioxide due to the nature of its molecular properties.

## Climate Finance

Understanding the landscape of a few different data/indicators helps us to understand the current state of adaptation and mitigation, how do we track action, accountability, and political will to change the outcomes related to those data? In other words, how do we know that initiatives to adapt to climate change or to mitigate emissions are being supported and whether developed countries are upholding their commitments to developing countries? One possible pathway to do so is through looking at climate change finance.

In the SDG 13, we can look directly at Indicator 13.a.1 which states its target to “Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.”

Looking at the metadata for this specific indicator, you will quickly learn that “there are no agreed upon indicators to track progress on the joint goal of mobilizing scaled up climate finance in the context of USD 100 billion goal by 2020 and through to 2025.”[[40]](#endnote-41) Given this clear data deprivation, what can we measure to figure out what action is being taken toward this Goal 13 target? And further down the line, how might this deprivation drive the political conversation on finance or how might this data deprivation be driven by politics?

* Visual: table of ten biggest/most prominent Climate Funds and descriptions of their purpose, data, types of finance (ODA), adaptation/mitigation, who tracks data, how often collected

As you can see in Table 13.X, each climate-related fund has their own method for collecting data and each has their own specific entity for tracking pledges and contributions. Most of the funds are linked to a Multilateral Development Bank (MDB) and count on the banks, or entities like the OECD or the UNFCCC to build the process for data collection and criteria for each funds’ disbursements. Further complicating these dynamics, there is no one definition of what qualifies as climate finance, either. To do just that, the OECD Development Assistance Committee (DAC) Rio Makers for climate adaptation and mitigation (Table 13.xx) established criteria for finance eligibility in 2010 and is one of the most referenced frameworks for determining whether or not projects are adequately linked to climate change.[[41]](#endnote-42) These marker’s validity, however, are recently being critiqued as an inadequate litmus test, especially for adaptation related finance projects. Despite these questions, the Rio Markers remain one of the more reliable measures for verifying the climate nature of development and purported climate projects’ validity.[[42]](#endnote-43)

* Visual: Table with Rio+ Markers for Adaptation and Mitigation

Whether or not loans count as climate finance as opposed to grants, or if any development aid that might meet a Rio Marker qualifies as climate finance, or even to what extent a project needs to focus on climate change are all debates that countries have yet to resolve. What we do know for certain is that the most commonly available data for us to identify are country pledges to climate finance particularly through the UNFCCC processes- but this does not tell us the whole story. For example, take the Green Climate Fund (refer to Text Box 13xx, pg. xx), whose governance is perhaps more straightforward than many funding mechanisms above: by looking exclusively at pledges, we are unable to see whether money has actually been contributed to the fund and even more than that- whether or not that money has a purpose and has been disbursed, or used. Given the complexity of climate finance data, we’ll do most of our exploration of the deprivations, availability of information, and manipulations of information in the next section on the Politics of Data.

## Climate change vulnerabilities

Climate change vulnerabilities with respect to physical, human, and socio-economic systems vary widely across sectors and geographies. Measuring these vulnerabilities is usually complicated because of these context-specific differences. For example, measuring the impact of climate change on sea-level rise is not the same as measuring impacts on soil degradation. They each require different indicators, but ultimately, they measure the same concept, i.e. climate vulnerability.

UNFCCC defines vulnerability as “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.”[[43]](#endnote-44) As you can tell, this definition is pretty loaded, and it even includes concepts that need further explanation than just defining vulnerability alone. For this chapter, we will explore metrics that measure the consequences of these vulnerabilities in the face of climate-related disasters.

Therefore, when it comes to SDGs, target 13.1 on “strengthening resilience and adaptive capacity to climate hazards and natural disasters” highlights the dangers of structural vulnerabilities to these events, and the need to strengthen communities as a response to them. One of the associated indicators uses direct human losses to climate-related events as the main metric to measure community vulnerabilities, specifically the “number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population.”[[44]](#endnote-45)

The United Nations Office for Disaster Reduction (UNDRR) is responsible for collecting the data on indicator 13.1.1 and counts impacts of climate-related events on human systems based on three criteria: deaths, missing, or directly affected. Deaths are straightforward in that a person dies during or after experiencing a climate-related event such as flooding, extreme heat/cold exposure, or any other climatic disaster. The ‘missing’ criteria, on the other, measures the number of people “whose whereabouts is unknown since the hazardous event.” Finally, the ‘directly affected’ criteria count the number of people that have experienced at least one of the following conditions since a hazardous event:

* “Injury, illness, or other health effects”
* Evacuation, displacement, or relocation
* Any “direct damage to their livelihoods, economic, physical, social, cultural, and environmental assets”[[45]](#endnote-46)

The three criteria attributed to indicator 13.1.1 is also part of the Sendai Framework for Disaster Risk Reduction 2015-2030, specifically Targets A and B which aim to “substantially reduce global disaster mortality,” and “the number of people affected globally by 2030,” respectively.[[46]](#endnote-47) These specific indicators were produced by an expert working group and endorsed by United Nations General Assembly (UNGA) in 2017.[[47]](#endnote-48) The Sendai Framework defines a disaster as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.”[[48]](#endnote-49)

The main compilers of global disaster mortality data is the Center for Research on the Epidemiology of Disasters (CRED), which maintains the Emergency Events Database (EM-DAT) covering more than “22,000 mass disasters around the world from 1900 to present day.”[[49]](#endnote-50)[[50]](#endnote-51) The database also disaggregates the data by types of hazard, number of deaths, number of missing people, number of injured people, and a total monetary value of total impact of the disaster. EM-DAT collects this data from many sources such as international organizations, national governments, and even the press.[[51]](#endnote-52)

It is worth noting, however, to record an entry into the database the impact of the disaster needs to "meet at least one of the following conditions:

* **Death**: 10 or more people deaths
* **Affected**: 100 or more people affected/injured/homeless
* **Declaration/international appeal**: Declaration by the country of a state of emergency and/or an appeal for international assistance."[[52]](#endnote-53)

# Politics of Numbers

## GHG Emissions

The politics of numbers around the sustainable development goal 13.2.2 presents itself in many ways. For example, “reductions” in greenhouse gasses cannot be ensured without adequate collection of net greenhouse gasses emissions data because of the nature of the goal. The word “reduction” implies reducing something relative to a pre-existing amount. If we do not know what the pre-existing amount was of the thing, we are trying to measure we cannot measure a “reduction” of that something. This needs to measure a “reduction in” greenhouse gas emissions to avert catastrophic climate change prescribes the space for data manipulation due to political interests in all international climate treaty frameworks when establishing the baseline counterfactual. Additionally, when we say we need to “not only reduce anthropogenic greenhouse gas emissions but also sequestering ***enough*** greenhouse gasses that have been emitted into the atmosphere since the industrial revolution.” What does enough mean? Due to the complex nature of climate physics and technological evolution, scientists have not come to a complete consensus on the definition of enough, thus breeding a space for political manipulation of data hidden in the ambiguity of the word and lack of a precise number defining enough.

Collecting proper and complete GHG emissions data, we can establish a baseline level of emissions and thus ensure we are achieving emissions reductions, and we can ensure that we sequester enough emissions to stay below the Paris Agreements goal of 1.5 degrees Celsius and define the word enough in a numeric and precise way. A baseline is defined as:[[53]](#endnote-54)

“The state against which change is measured. In the context of transformation pathways, the term ‘baseline scenarios’ refers to scenarios that are based on the assumption that no mitigation policies or measures will be implemented beyond those that are already in force and/or are legislated or planned to be adopted. Baseline scenarios are not intended to be predictions of the future, but rather counterfactual constructions that can serve to highlight the level of emissions that would occur without further policy effort. Typically, baseline scenarios are then compared to mitigation scenarios that are constructed to meet different goals for greenhouse gas (GHG) emissions, atmospheric concentrations, or temperature change. The term ‘baseline scenario’ is used interchangeably with reference scenario’ and ‘no policy scenario.’”

This need for a baseline level of emissions was solved through the IPCC’s First Assessment Report, mentioned earlier in the chapter.

The first international climate treaty, the Kyoto Protocol, was followed by the first comprehensive climate and emissions report in 1990, published in 1991. This was a necessary order of operations because we cannot get countries to measure emissions reductions next to a level that we do not know due to lack of data. Publishing the report in 1991 allowed countries to be held accountable. For the first time the technical capacity to allocate responsibility differently for countries proportional to the number of cumulative emissions that they have contributed existed. This now proven and understood differentiation in responsibility inspired Kyoto to allocate differentiated emissions reductions goals to different countries.

One way that this was built in was the choice in base year:[[54]](#endnote-55)

“Base year emissions, under the Kyoto Protocol, are defined as the aggregate anthropogenic carbon dioxide equivalent emissions of the GHGs listed in Annex A sources in a historical base year. For most Annex I Parties, the historical base year is 1990 but Parties included in Annex I undergoing the process of transition to a market economy may choose a year or period other than 1990, in accordance with Article 3, paragraph 5. Annex I Parties may choose to use 1995 as the base year for total emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF6), in accordance with Article 3, paragraph 8 and 1995 or 2000 as its base year for nitrogen trifluoride (NF3) in accordance with Article 3, paragraph 8 bis of Doha Amendment to the Kyoto Protocol.”

This choice in base year is a way to quickly skew data narratives. If a country has a goal to reduce emissions relative to 1995 levels vs 1990 levels and they have higher emissions in 1995, the goal reductions goals will be much easier to meet while on the contrary it addresses previous injustices and more fairly allocates emissions responsibilities to the historic emitters.

The differentiated nature of goals for countries empowered some to reject the treaties because of “unfair” reductions targets relative to other countries. The reporting framework put forth in the Paris Climate Agreement, “The Enhanced Transparency Framework,” was structured in a way to alleviate some of the political motivation behind reporting emissions data because there was no mandatory target to be achieved but rather “nationally determined contributions.” The emphasis on this framework was moved from reducing emissions numbers to transparency in reporting of accurate data.

The metadata is self-reported from each member country through estimates and calculations which “mostly follow one of a few publicly available protocols.[[55]](#endnote-56),[[56]](#endnote-57) It is extremely difficult to get exact measurements of emissions due to things like unknown natural gas leakage also known as “runaway methane leakage,” etc. To exacerbate data collection issues, there is no systematic, peer-reviewed assessment of self-reported emissions data quality or accuracy.”[[57]](#endnote-58) This is problematic because this could easily lead to differences in definitions and scopes for reporting emissions per entity.

Some challenges associated with self-reported emissions data arises due to the high burden placed on the individual city due to the high cost of the endeavor and the technical challenges associated with the calculation and modeling necessary to estimate the data. This could result in incomplete estimates or biased outcomes. “Compounding the problem, independent objective assessment of emissions estimates creates additional technical hurdles and is thus, rarely attempted. These challenges are particularly important when placed in the context of the reduction targets. For example, the city of Indianapolis has indicated that they aim to make a 20% reduction in building GHG emissions between by 2025 relative to 2016 values.[[58]](#endnote-59) However, with the 26.9% underestimate found here, it will be difficult to know when and if this target is truly achieved or track progress towards it.”[[59]](#endnote-60)

“Accuracy and precision are critical to estimating GHG emissions, whether reported by a city, state, or country. The absence of an accurate emissions assessment (i.e., baseline and ongoing) makes prioritizing mitigation policy options difficult, can lead to misallocation of scarce mitigation resources, and presents challenges to independent assessment and course correction. Fortunately, there is progress on building a systematic emissions quantification system that promises a systematic approach to generating space/time-resolved, atmospherically calibrated emissions information for all cities in collaboration with local authorities. With such a collaborative system, urban GHG mitigation practitioners can devote time and resources to the activity they have the greatest knowledge and political influence over: the best mitigation strategies for their city or country.”

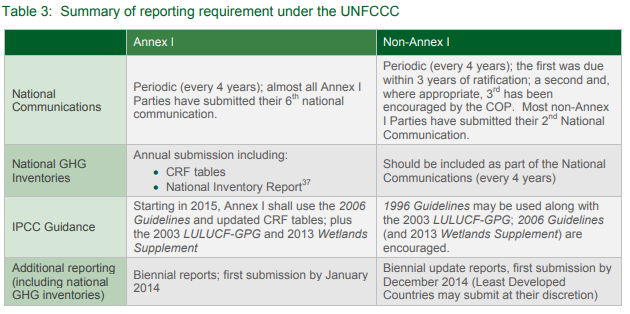


Figure 13.3: Example of text box with figure[[60]](#endnote-61)

## Climate Finance

*[Opening Textbox will include a few different quotes showing the varying predictions of finance needed to address climate change. These are two examples of what that will look like, but with a little less detail and more numbers:*

*“Meanwhile the GHF, a think-tank commissioned by Kofi Annan, estimated that economic losses globally attributed to climate change amount to more than US$125 billion a year, and are estimated to rise to US $600 billion by 2030 (GHF 2009:1). Given this context, what can be expected from current efforts to curb global emissions and achieve climate justice?”(Bracking 2015, 281)*

*"The UN’s Intergovernmental Panel on Climate Change (IPCC) says that an annual investment of $2.4 trillion is needed in the energy system alone until 2035 to limit temperature rise to below 1.5*C from pre-industrial levels. (That is around 2.5% of the world’s economy.)"(Yeo 2019)]

<https://www.flickr.com/photos/wedoworldwide/23565325642/>

By now you’re familiar with the data and political landscapes of both mitigation and adaptation- do you agree with the assessment that this project, highlighted in Oxfam’s 2020 Climate Finance Shadow Report, is not an appropriate climate-related project?

In 2017–18, Japan reported over $700m in climate finance towards its ‘Matarbari Ultra Super Critical Coal-Fired Power Project’ in Bangladesh.14 Japan defends the loan as climate finance because the plant produces less greenhouse gas emissions than a similarly sized plant using subcritical technology.15 But as fossil fuels contribute to climate change, the loans should not be counted as climate finance. Lack of transparency makes it hard to assess whether other countries have also reported coal projects to the UNFCCC in 2017–18. The Japanese Environment Minister recently signalled that Japan would phase out such financing, though the move has drawn criticism for being too equivocal."[[61]](#endnote-62)

One of the few positive outcomes of COP14 in Copenhagen in 2009 was the plan for developed countries to contribute $100 billion annually to developing countries by 2020, specifically “new and additional resources.”[[62]](#endnote-63) Given the increasingly urgent need for adaptation and mitigation efforts as the impacts of climate change intensified around the world at this time, this proposal was well received. But the actual implementation of this finance stream, as you have noted from the metadata for Goal 13, has not been realized more than a decade later. Questions of who is accountable to track this finance, where will it be housed, what projects will be eligible, and especially which financial contributions by developed countries count toward this specific goal are a part of all climate finance related conversations. These disagreements, particularly between developed and developing countries, have stalled climate financing, and reaching the goal of mobilizing $100 billion USD annually by 2020.[[63]](#endnote-64)

As we discussed in the overview of our data in the last section, there are many funds that are related to climate change or have climate change mitigation or adaptation as their mandate. But what happens when projects that aren’t related to climate change need funding? Isn’t everything related to climate? So what criteria are determining what is or isn’t a climate-related project? What we see in the political landscape is a seemingly purposeful watering down of what counts as climate-related or loose mentions of climate change within development projects in order to access this growing funding stream.[[64]](#endnote-65) This can be defined as “***Greenwashing***,” in other words, making something appear to benefit the environment or contributing to climate solutions when they do not substantially do so.[[65]](#endnote-66) According to a 2011 review of 10,414 projects coded as climate-related by contributors, less than half of these projects had clear contributions to adaptation or mitigation and a further third of the projects were inappropriately coded as climate change when it was clear they were not.[[66]](#endnote-67)

This dilemma has continued into the present day as detailed by a 2020 report by Oxfam which further this argument and poses the growing concern that climate finance is being over-reported. According to the report, not only do they estimate that the climate-relevance of reported projects may be a third less than report, the amount of total climate finance reported by the UNFCCC and OECD, totals of $59.5 billion between 2017-2018, are likely to be significantly over the actual climate-specific finance adjusted based on grant equivalence, which they estimate to be closer to somewhere between $19-22.5 billion, with only $6-7 billion of those funds going to adaptation-specific projects.[[67]](#endnote-68) Beyond questions about classification are matters of over-reporting in climate finance metrics and possible co-benefits, such as predicted prevented emissions (See GCF Text Box 13.xx). What’s a reason that western/developed countries might be over-estimating the amount of climate finance mobilized?

Having clear and transparent data is a matter of political importance for achieving SDG Target 13.a.1, but also for addressing the most vulnerable communities needs for mitigation, and more importantly, adaptation efforts. In a report by IIED, researchers found that less than 10% of climate finance from international climate funds reaches local communities through community-level projects and activists by 2016. The report also estimated that “out of the US$17.4 billion total, less than 10% ($1.5 billion) was approved for locally focused climate change projects between 2003 and 2016.”[[68]](#endnote-69)

To improve these disparities and to increase the success of funding initiatives, climate justice advocates and activists have pointed to the need to change the design of climate financing which was founded on Western ideals and wants.[[69]](#endnote-70) What’s further, there are accounts of the exclusive nature of finance processes that prevent the participation of most-impacted communities in design, metrics, and implementation. According to a report on racial injustices in climate proceedings, “Indigenous Peoples and other marginalized groups are ignored at all levels of decision making. The lack of engagement with unequal power relationships in both adaptation research and practice can lead to adaptation interventions that do not benefit the poorest and most marginalized. In some cases, local communities even resort to blocking the implementation of adaptation measures, as one of the very few tools available to those whose voices are not heard in the design of policies and interventions that intimately affect their lives.”[[70]](#endnote-71)

A big part of this resistance is to the growing amount of loans used in place of grants, or as ***Official Development Assistance*** (ODA) classifies differences between concessional (ex: grants) and non-concessional(ex: loans) funds.[[71]](#endnote-72) (see chapter xx, page xx) [More will be added to this point later, linking to need for more adaptation funding]

If you decide that you want to look further into climate finance, something you will notice is the propensity to cite the pledges that countries have made. Take note: do these sources also talk about whether the money has actually been contributed to the fund they’ve pledged to? Has the contribution been mobilized into an actual project? What kind of finance is it? Is it a loan that countries will need to pay back or is it a grant?

***[GCF Text Box 13.xx]***

The Green Climate Fund (GCF) was established in the same section of the Copenhagen Accord at COP15 as the $100 Billion finance commitment.[[72]](#endnote-73) While there has long been speculation that the GCF would hold most of the “new and additional resources,” experts continue to debate whether that is the actual purpose of this newer climate fund.[[73]](#endnote-74),[[74]](#endnote-75),[[75]](#endnote-76) “The core of the Green Climate Fund’s (GCF) mandate comes from Article 2(c) of the Paris Agreement, which “aims to strengthen the global response to the threat of climate change … by making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”[[76]](#endnote-77) Unlike many other funds, the GCF is supposed to fund a 50:50 split between adaptation and mitigation projects. As of 2021, more than 60% of the approved projects were mitigation-based with a clear lag in adaptation projects being approved.[[77]](#endnote-78)

The GCF is an interesting fund for us to explore together, because it has many of the symptoms of the data deprivations, over-reporting, and deviations from ODA that epitomize the distrust between developed and developing countries.

* **Selection Criteria**: Not based on Rio Markers; are prioritized by potential emissions reductions, favoring mitigation over adaptation projects;
* **Over-Reporting**: there is little accountability as to the progress of approved projects or the validity of the measurements- these are all country-reported; there are a lack of incentives for countries to report accurately; in 2021 the GCF found that there has been an average of
* **Lack of Contribution Transparency**: The data we’ll be exploring in our module are ***Climate Finance Pledges*** made to the GCF.[[78]](#endnote-79) Not only are the pledges not measured in grant-equivalency (so when countries pledge money to the fund, they can actually be over-representing how much they will actually contribute), but they do not reflect whether or not that finance will end up in the Bank or dispersed to projects.[[79]](#endnote-80)

## Conclusions from Finance Section

Moving forward, to meet the $100 billion climate finance commitment countries will need to decide what is and what is not climate finance, who should monitor and collect the data related to these projects and make clear the role of most-impacted countries and communities, especially indigenous peoples’ ability to engage directly in the formation of these standards.

## Climate change vulnerabilities

The politics of counting human impacts from climate-related events can be quite contentious. One of the main issues of counting impacts is that it does not disaggregate dead, missing, or injured people by sex, age, disability, or income. This type of disaggregation allows to paint a clearer picture of the intensity of the impact. For example, the economic impact of the death of a person who is the prime income earner of a household might be felt differently from one household to another.

Another drawback of SDG’s 13.1.1 indicator is that it only focuses on those that are *directly* affected by the climate-related events. It does not consider indirect losses due to environmental disasters such as business interruptions, lost time at school, or foregone income, which do impact communities in the long run.

Finally, the indicator only focuses on “small-scale sudden-onset disasters” and does not take into account disasters that are long in duration such as persistent droughts or epidemics.[[80]](#endnote-81) For example, the Global Burden of Disease Study found that almost two million people died from “non-optimal temperature,” an increase of approximately 500,000 people since 1990.[[81]](#endnote-82) These slow-onset trends are not represented in indicator 13.1.1 which is a missed opportunity to address climate change impacts that affect more livelihoods than we are willing to count.

The main argument for not counting slow-onset climate impacts has to do with attribution. **[Add example of attribution challenges]**

# 

# Conclusion

# Data and climate change action are linked in that it is helpful, if not necessary, to have good information to make informed plans and the strongest possible policies that meet development goals and the needs of most impacted communities. As we’ve seen in this chapter, the nature of what data are used the most often and how they are used gives us insight into the global power and political dynamics of climate change.

Looking forward, there is a clear need for not only transparency, but clear, agreed to definitions of the many context-specific variables of climate impacts and better accountability for what data are used and why for emissions targets to reach the global goal of limiting emissions to 1.5 degrees Celsius above pre-industrial era. Further, future financing should heed any future definitions to support in more accurately targeted and participatory disbursement processes that go beyond the politics of pledges. There is much work to be done for the data revolution to benefit climate action, but it can be done, and you now have to tools to start thinking about how.

# Endnotes

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