

THE GLOBAL STOCKTAKE

CLIMATE DATATHON

PROMPT OWNER

Data-Driven EnviroLab (DDL)

PROMPT TOPIC

Net-Zero CO₂eq and GHG Targets

PROMPT DATASET

Net Zero Tracker dataset - the Net Zero Tracker dataset is a compilation of net zero targets (and other related data) of all countries and territories globally, every region in the 25 largest emitting countries, all cities with 500,000+ inhabitants, and the companies on the Forbes 2000 list. See Appendix for more information.

TOPIC BACKGROUND

Net Zero

As highlighted in the IPCC Special Report on 1.5C released in 2018 and echoed by the IPCC's Sixth Assessment Report published earlier this year, global CO₂eq emissions will need to reach net zero by the early 2050s to limit temperature rise by 1.5C. With only approximately one-fifths of the global carbon budget remaining, getting to net-zero greenhouse gas emissions globally is of crucial importance even while pathways for individual countries may differ. In response to these assessments, we have seen a proliferation of net-zero commitments across countries, regions, cities, and companies in recent years. As of 2022, global coverage by net-zero targets have exceeded 83% of global greenhouse gas emissions and 91% of global GDP.

While this rapid increase in net-zero target setting is encouraging, recent students have highlighted that much remains to be seen on the coverage and ambition of these targets. The Corporate Climate Responsibility Monitor found that amongst the 25 companies that were assessed, only 3 companies had committed to deep decarbonization of over 90% across their value chain despite all 25 companies pledging some form of net-zero commitments (1). The 2022 Net-Zero Stocktake report also found that less than one-fifths of national and subnational governments' net-zero commitments meet the Race to Zero's minimum procedural standards of robustness (the "starting line" criteria) (2). These findings indicate the need for greater scrutiny on the coverage and ambition of actors' net-zero commitments.

Non-State Actors (NSAs)

Non-state actors is a term that refers to any group of actors that are not parties to the Paris Climate Agreement. Cities, subnational governments, and companies—all NSAs—have significant contributions to climate change mitigation efforts (3). In a comprehensive analysis of NSAs commitments to mitigate climate change, one study identified that collective progress can be better tracked by including insights from NSAs (4). It has also been identified that by nesting the accounting of NSAs within the relevant parties, we can better understand the opportunities that exist for increasing mitigation efforts (5).

MAIN PROMPT QUESTION/CHALLENGE

How can analysis and visualization of publicly available data be used to further map the ambition of current net-zero CO₂eq or GHG non-state actor targets/commitments?

1. Corporate Climate Responsibility Criteria 2022, NewClimate Institute

2. Net Zero Stocktake 2022, Net Zero Tracker

3. Hsu, A., Höhne, N., Kuramochi, T., Vilariñog, V., Sovacoole, B. K. 2020. Beyond states: Harnessing sub-national actors for the deep decarbonisation of cities, regions, and businesses. Energy Research & Social Science.

4. Kuramochi, T., Roelfsema, M., Hsu, A., Lui, S., Weinfurter, A., Chan, S., Hale, T., Clapper, A., Chang, A., Höhne, N. 2020. Beyond national climate action: the impact of region, city, and business commitments on global greenhouse gas emissions. Climate Policy.

5. Schletz, M., Hsu, A., Mapes, B., Wainstein, M. 2022. Nested Climate Accounting for Our Atmospheric Commons—Digital Technologies for Trusted Interoperability Across Fragmented Systems. Frontiers in Blockchain.

SUPPLEMENTARY QUESTIONS

To better understand the efficacy of current net-zero commitments and how they contribute to the achievement of the Paris Agreement's goals, a much greater appreciation of current net-zero commitments' ambition is required. The term "ambition" here is intentionally kept loosely defined - a strong submission will consider different aspects of ambition and better define how the team's definition of ambition is supported by existing research on what is needed to achieve the Paris Agreement's goals. Additionally, the ability to draw from and combine publicly available data across multiple sources will also be judged favorably.

Some potential dimensions and supplementary questions to consider when approaching the prompt:

- How do target years of actors' net-zero commitments align with climate science and principles (such as equity (6)) (for example, using data such as the [Carbon Majors data](#) to identify major emitters of greenhouse gas emissions)?
- What can we do to map and visualize the different sources and types of emissions included in an actor's net-zero commitment with the actor's main sources of emissions?
- Can we use existing data to better understand and narrate options for carbon removal technologies and communicate ways to better protect global carbon sinks?
- What are key steps and actions that actors are planning/proposing (e.g., within their action plans or reports) to take towards achieving their net-zero commitment and are there any particularly crucial actions actors' should consider?
- How do we combine net-zero actors' data across different sources to get a view of the current landscape and identify potentially key influencers within their network of actors pledging net-zero commitments?

The above dimensions are by no means exhaustive and are meant to serve only as guiding questions or potential areas of investigation. Participants are also encouraged to explore different questions using a combination of the Net Zero Tracker data as well as supplementary datasets from external sources.

Strong submissions should also build on the existing exploration and research done on the data (for example, by the Net Zero Stocktake 2022 report) as well as provide clear and striking visuals that illustrate the data from datasets used.

6. Rogelj, J., Geden, O., Cowie, A., Reisinger, A. 2021. Net-zero emissions targets are vague: three ways to fix. Nature.

Appendix - Data tables and variables

Primary dataset and data variables:

Net Zero Tracker dataset - the Net Zero Tracker dataset is a compilation of net zero targets (and other related data) of all countries and territories globally, every region in the 25 largest emitting countries, all cities with 500,000+ inhabitants, and the companies on the Forbes 2000 list. The dataset includes:

Indicator name	Type	Description
IDENTIFICATION		
Entity ID	Text	Net Zero Tracker ID code
Country	Alpha code	ISO3C Country code
Actor type	Multiple choice	Actor classification(e.g., country, city, etc.)
TARGETS		
End target	Text/Numeric	What is the end target as described by the actor (e.g., Net-zero, Zero emissions, No target, etc.)
End target year	Date	Year when the end target is to be achieved.
End target status	Multiple choice	<p>Current status of target</p> <p>Countries / States / Cities</p> <ul style="list-style-type: none"> ● Achieved (externally validated) ● Achieved (self-declared) ● In law ● In policy document ● Declaration / pledge ● Proposed / in discussion <p>Companies:</p> <ul style="list-style-type: none"> ● Achieved (externally validated) ● Achieved (self-declared) ● In corporate strategy ● Declaration / pledge ● Proposed / in discussion
Status date	Date	Year when current target status was reached
Interim target	Text/Numeric	Interim targets laid by the actor, if any
Interim target year	Numeric	Target year for earliest interim target
End target text	Text	Cut and paste text of end target

Interim target text	Text	Cut and paste text of interim target
Target notes	Text	Brief description of targets and archived links to sources.
Source url	Text	Link to the website(/s) where the information submitted into the form has come from, e.g., a link to the Net Zero plan.
COVERAGE		
Gases coverage	Multiple choice	<p>What gases are covered by the end target?</p> <ul style="list-style-type: none"> ● Carbon dioxide only ● Carbon dioxide and other GHGs ● Not specified
All territorial emissions (cities and states only)	Binary	<p>Does the end target cover all territorial emissions?</p> <p>Yes / no / not specified</p>
Consumption emissions (cities, states, countries)	Binary	<p>Does the end target include consumption emissions?</p> <p>Yes / no / not specified</p>
International aviation (countries only)	Binary	<p>Does the end target include international aviation?</p> <p>Yes / no / not specified</p>
International shipping (countries only)	Binary	<p>Does the end target include international shipping?</p> <p>Yes / no / not specified</p>
Scope 1 (companies only)	Binary	<p>Does the end target include Scope 1 emissions?</p> <p>Yes / no / not specified</p>
Scope 2 (companies only)	Binary	<p>Does the end target include Scope 2 emissions?</p> <p>Yes / no / not specified</p>
Scope 3 (companies only)	Multiple choice	<p>Do the companies claim to cover scope 3?</p> <ul style="list-style-type: none"> ● Yes ● No ● Partial ● Not specified
Historical emissions	Binary	<p>Does the target include historical emissions emitted by the entity?</p> <p>Yes / no</p>

Coverage notes	Text	Brief description of coverage and archived links to sources.
GOVERNANCE		
Plan	Multiple choice	Does the actor have a publicly available plan that lays out steps toward its target? Yes/No
Reporting mechanism	Multiple choice	<ul style="list-style-type: none"> • Does the actor have a public reporting mechanism? • No reporting mechanism • Less than annual reporting • Annual reporting
Equity	Binary	Does target plan refer to equity? Yes / no
Accountability	Multiple choice	Is the leadership of the entity formally accountable for delivery on the target? Yes / no / not specified
Governance notes	Text	Brief description of coverage and archived links to sources.
SINKS AND CREDITS		
Carbon credits (offsets)	Multiple choice	Does the target allow for traded credits (offsets) from outside the actor's territory / value chain to meet the target? <ul style="list-style-type: none"> • Yes • No • Not specified.
Carbon credit conditions	Multiple choice	If yes, does the target impose conditions on trading credits (offsets)? Select all that apply: <ul style="list-style-type: none"> • No conditions specified • Must be high environmental integrity • Avoid social harm • Avoid biodiversity harm • Not include avoided emissions (e.g. via renewable energy projects) • Not include emissions reductions (e.g. via greater efficiency) • Not include biological sequestration (e.g. via afforestation)

		<ul style="list-style-type: none"> Maximum % of emissions that can be offset → S2A Enter % (number 0-100) Other conditions → S2B Describe them (text)
Removals targets	Binary	<p>Does the actor have separate targets for emissions reductions and removals?</p> <p>Yes/No</p>
CDR	Multiple choice	<p>Does the actor use or plan to use carbon removal within its target boundary (ie not external offsets)?</p> <ul style="list-style-type: none"> No Yes (unspecified) Yes (nature-based removals e.g. Forestation, soil carbon enhancement) Yes (CCS-based removals e.g. BECCS, DACCS) Yes (nature-based and CCS-based removals) Not specified
Sinks and credits notes	Text	Brief description of coverage and archived links to sources.
CONTEXT DATA		
Memberships	Multiple choice	<p>Is the entity part of any of the following, tick all that apply</p> <ol style="list-style-type: none"> Race to Zero (sub/non-state) Climate Ambition Alliance (countries)
GDP real (PPP)	Numeric	USD (note currency year / type when uploaded, e.g. constant 2019 dollars)
Annual revenue	Numeric	USD (note currency year / type when uploaded, e.g. constant 2019 dollars)
Industry	Text	Industry of actor based on CDP Business Activity Classification
Employees	Numeric	Number of employees
Market Index (companies)	Multiple choice	<p>S&P 500 (SPX)</p> <p>Dow Jones (DJI)</p> <p>Nasdaq (IXIC)</p> <p>FTSE 100 (UKX)</p> <p>Nikkei (NI225)</p>
GHGs	Numeric	Latest GHG inventory in MT CO ₂ e
Inventory year	Date	GHG Inventory year

Higher Net Zero	Binary	Does a higher administrative unit that the entity belongs to have a net-zero target in place? Yes/No
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More information on the Net Zero Tracker data can be found [here](#) and [here](#).

Secondary/Supplementary dataset and data variables:

The ClimActor dataset is a dataset consisting of over 10,000 subnational actors that have made some form of climate pledge/commitment. The dataset includes:

Indicator name	Type	Description
Name	Text	Actor name
Iso	Text	ISO3C Country code
Entity Type	Text	Actor classification(e.g., country, city, etc.)
Country	Text	Name of country actor is in
Area	Numeric	Size of actor in m ²
Num commit	Numeric	Number of climate initiatives actor have committed to
Lat	Numeric	Latitude coordinate of actor
Lng	Numeric	Longitude coordinate of actor
Population	Numeric	Population of actor
Population Year	Date	Year of actor's population
State	Text	State which actor is in
Admin_1	Text	Name of administrative unit that is one level above actor's administrative unit
Initiatives Committed	Text	List of climate initiatives which actor has pledged to
Region	Text	Geographical region which actor is in (e.g., East Asia and the Pacific)