

**Understanding NAZCA: Challenges and Future of the World's Largest Voluntary Climate
Action Platform**

A Memo Prepared by Yale University

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Note: The number of commitments on NAZCA and the number of scraped commitments do not match exactly, due to technical challenges such as empty pages and repetitive entries of the NAZCA website. This paper is based on a custom database the Yale team built from scraping and cleaning the NAZCA data as of February 28, 2016. This customized process has allowed for a more accurate database by which to analyze the composition and meaning of non-state and sub-national climate actions recorded in NAZCA.

Acronyms

API	Application program interface
CBI	Climate Bonds Initiative
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
cCr	carbon Climate Registry
CAT	Climate Action Tracker
CoM	Covenant of Mayors for Climate and Energy
CSO	Civil society organization
EAE	Energy Access & Efficiency (NAZCA/LPAA action area)
ER	Emissions Reduction (NAZCA/LPAA action area)
Gt	Gigaton(s)
GHG	Greenhouse gas
GPC	Global Protocol for Community- Scale Greenhouse Gas Emission Inventories
IOCC	Investors on Climate Change
LPAA	Lima-Paris Action Agenda
Mt	Megaton(s)
NAZCA	Non-State Actor Zone for Climate Action
PR	Private Finance (NAZCA/LPAA action area)
RE	Renewable Energy (NAZCA/LPAA action area)
STP	Short-term Pollutant (NAZCA/LPAA action area)
TCG	The Climate Group
UNEP	United Nations Environment Programme
UNGC	United Nations Global Compact
UCP	Use of a Carbon Price (NAZCA/LPAA action area)

Summary for Policymakers

Cities, states, companies, financial institutions and civil society organizations throughout the world are engaging in climate change initiatives. More than 11,000 climate actions have been pledged in the last several years alone. To gauge the broad array of global climate actions, the UN Framework Convention on Climate Change (UNFCCC) launched the Non-State Action Zone for Climate Action (NAZCA) platform in December 2014. NAZCA shows the vast scale of pledged and ongoing actions from non-state (e.g., companies, investors, and civil society organizations) and sub-national (e.g., cities and regions) actors. These actions range from emissions reduction pledges, commitments to renewable energy production, to setting internal carbon prices and to making investments in green bonds.

This report gives an overview of NAZCA's content, exploring the extent to which cities, regions, companies, investors, and civil society organizations are represented on the platform, and provides an analysis of the themes and trends in the commitments made by these actors. The analysis also identifies the platform's key weaknesses, including its vulnerabilities to double-counting caused by overlaps among individual and cooperative commitments. An overview of each NAZCA data providers' approach to collecting, tracking and verifying their commitments, along with an overview of the characteristics of commitments in NAZCA's 11 action categories, inform a discussion of the potential for aggregating data across NAZCA. We also identify additional data providers that could expand the scope and fill information gaps in NAZCA. This assessment provides a critical examination of NAZCA's pledges and recommendations for a future path forward.

In brief, we find:

- NAZCA's largest portion of climate actions comes from cities and regions, areas that represent 46 percent of all individual pledges on the platform.
- Most climate actions are categorized as "emissions reduction" commitments, reflecting a UNFCCC norm that focuses primarily on climate mitigation efforts, as opposed to adaptation measures.
- Most of the city and company climate actions captured by NAZCA are in developed countries. Seventy-four percent of NAZCA's city climate actions are based in Europe. The largest data gaps of recorded climate action occur in Africa, Southeast Asia and parts of East Asia, and Latin America.
- Large corporate leaders representing 30 percent of Forbes 2000 are taking climate actions, yet some heavily-emitting sectors, including fossil fuel companies, are lagging.
- Institutional investors have committed to invest up to \$720 million in green projects and technologies, while companies representing more than one-third of the global economy have pledged various kinds of climate action.
- Cities, regions, companies, investors, and CSOs have committed to issuing \$46.8 billion in green bonds, a tax-exempt instrument to raise funds for environment-friendly projects.

- NAZCA's seven data providers vary in their approaches to data collection and commitment tracking and verification. Only two of the seven data providers directly track their members' implementation of their climate commitments, although others provide aggregate analysis or include reporting requirements that give insight into overarching or individual progress.
- NAZCA has potential to grow into the world's premier hub for climate action, but many gaps must be addressed. These gaps include transparency in commitment selection criteria, an improved categorization system, and geographic and sectoral blindspots.
- Inconsistent metrics, reporting criteria, and boundary definitions, among other issues, prevent comparability between individual climate actions and overall aggregation of impact.

NAZCA is an important first step to understanding climate mobilization's global extent and how these efforts can spur more ambitious national contributions. The platform must shift towards the next phase of tracking initiatives' achievements and outcomes. NAZCA needs to include performance data that reflects which climate strategies are working and which are not. The information that NAZCA's core data providers collect should be expanded to support this performance evaluation. Existing data registries and platforms are too singularly focused on mitigation, meaning that other key functions, like capacity building, are often overlooked. There is a resulting dearth of information about actions' impacts on climate change adaptation, resilience, and other co-benefits. Focusing solely on emissions also means that enabling conditions for policy successes are not being tracked. Non-state and sub-national actions can, for example, leverage public support for implementation of government policies, engaging individuals to help meet national targets. These sorts of climate actions can establish transnational norms that support low-carbon transitions. Emissions-focused actions may not capture these contributions.

Developing consistent measurement and reporting protocols, creating open data standards, and creating tools like Application Programmers Interfaces (APIs) that open NAZCA's data to third parties and analyzers will help address some of NAZCA's challenges identified in this paper. Leveraging the Lima-Paris Action Agenda's ability to recruit new participants and focus attention on the progress made in implementing climate action would help ensure the platform's longevity and credibility. The Lima-Paris Action Agenda could also help frame NAZCA as a central convenor of global climate action. The global community and UNFCCC need such a portal to effectively track which actors are doing what and how these actions are contributing to national contributions to the Paris Agreement.

Introduction

NAZCA was launched by the Peruvian government and United Nations Framework Convention on Climate Change (UNFCCC) in December 2014 at COP-20 in Lima. NAZCA gives a bird's-eye view of the universe of climate actions, creating a picture from which broad trends emerge from local data. Highlighting commitments made by non-state actors (e.g., companies, cities, regions, investors), NAZCA shows the vast scale of pledged and ongoing actions that contribute to global climate change mitigation and adaptation.

NAZCA currently displays more than 11,000 climate change commitments from cities, regions, businesses and investors. These commitments span sectors, or “action areas,” outlined in the Lima-Paris Action Agenda (LPAA), a collaboration between the Peruvian and French COP Presidencies, the Office of the Secretary-General of the United Nations, and the UNFCCC Secretariat. The LPAA aims to support and showcase collaborative commitments from state and non-state actors to accelerate the implementation of climate action. NAZCA includes LPAA initiatives and applies its coding system to the commitments it collects from seven additional data providers.¹

NAZCA commitments represent a snapshot in time, and the portal is continuously expanding the breadth of action it captures. As the NAZCA portal evolves, challenges from data aggregation and interpretation grow more complicated as well. Blending existing data from heterogeneous sources and non-standardized systems into one portal is difficult; identifying the size, type, and impact of each climate action is even more challenging. Effectively tracking and monitoring the commitments also poses a major challenge, given their voluntary nature. The potential failure of commitment implementation and follow-through might present the greatest risk to NAZCA's credibility and long-term influence, especially during the post-COP-21 period.

This report presents an overview of the NAZCA's content, exploring the extent to which cities, regions, companies, investors, and civil society are represented on the platform, as well the themes and trends in the commitments made by these actors. It also identifies the platform's vulnerabilities to double-counting, from overlaps between individual and cooperative commitments, overlaps in attempts to aggregate climate actions, and overlaps resulting from technical design flaws. An overview of each of the NAZCA data provider's approach to collecting, tracking and verifying their commitments, along with an overview of the characteristics of commitments across NAZCA's 11 action categories, inform a discussion of the possibilities of aggregating data across NAZCA. This assessment also lays the foundation for a conversation around the current and potential goals for the level of confidence for commitments included on the platform.

Based on this analysis, the report closes with several recommendations for the future of NAZCA. Clarifying and standardizing the labeling and inclusion of commitments on the platform would help address many of the risks of double-counting and gaps in the level of confidence. Enabling the platform to search for commitments across both actors and actions would also

¹ Non-state Actor Zone for Climate Action (NAZCA) Flyer. (2015). I. Ponce, Personal Communication, February 19, 2016.

enable it to provide a clearer picture of the field of climate action. Supporting harmonization between the different data providers would also greatly enhance the ability to compare and aggregate commitments on the NAZCA platform, and across the landscape of non-state and sub-national action more broadly. Over the long-term, developing the platform's ability to track the progress of climate commitments would help highlight the importance of supporting their implementation.

A. Key Figures & Data Comparability

A-1. Cities and Regions

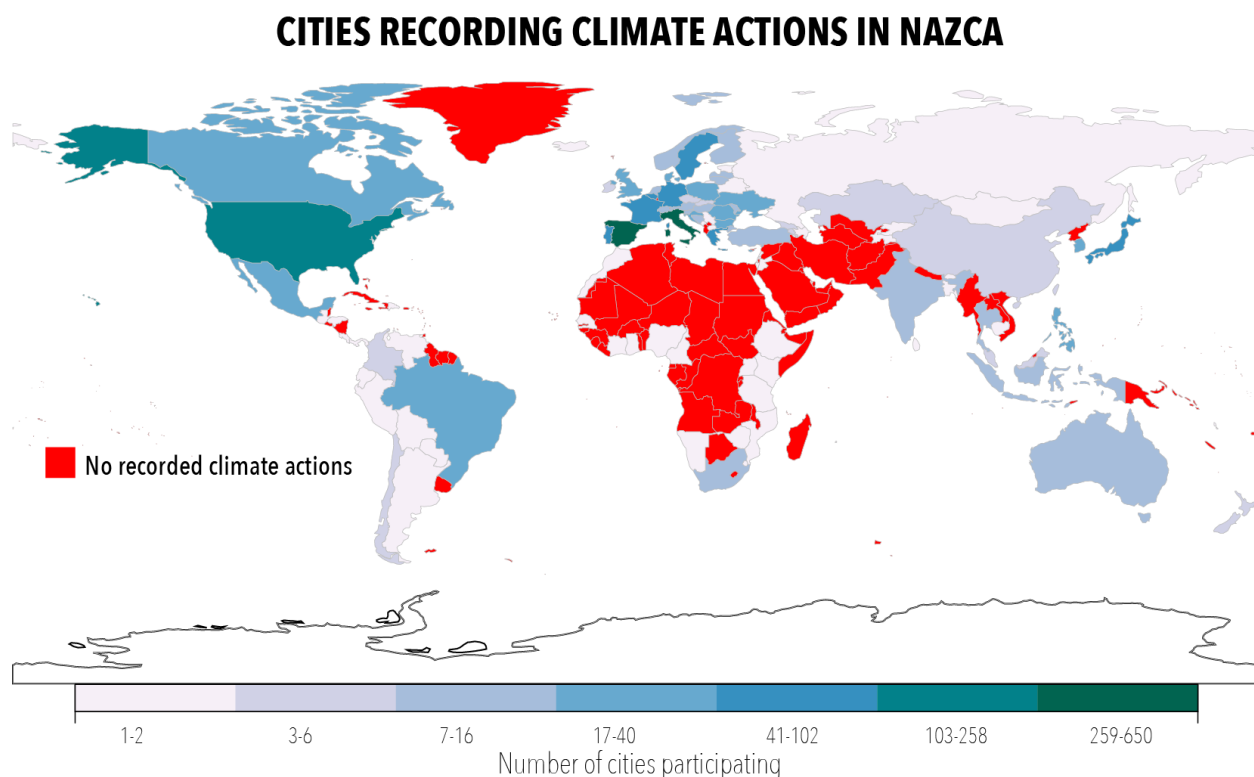


Figure 1. Geographic distribution of cities taking climate actions, both individual and cooperative.

Total number of individual actions: 3,149

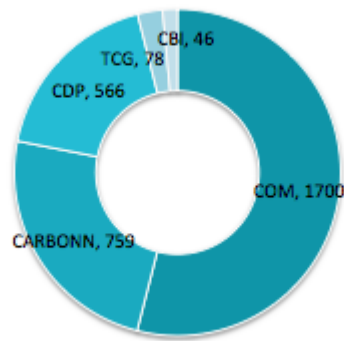


Figure 2. Breakdown of city and region commitments by data provider, including Compact of Mayors (COM), Carbon Disclosure Project (CDP), The Climate Group (TCG), Climate Bonds Initiative (CBI), and Carbonn.

Cities and regions are the most active NAZCA participants, representing 45.6% (3,149/6,960²) percent of individual pledges. In total, the 2,021 cities and 114 regions on NAZCA cover 7.3 percent and 6.5 percent of global population respectively (Figure 1).³ This paper does not aggregate city and region populations due to the fact that the jurisdiction of cities and regions overlap. Still, separate reporting of city and regional commitments does not avoid the fact that there will still be inherent overlap if regions encompass cities that are also reporting separately. Because NAZCA allows the separate reporting of commitments from cities and regions, we reflect their estimated population accordingly, recognizing that there is inevitable overlap.

Cities and regions are taking climate actions primarily in the realm of emissions reductions. Over 80 percent of the individual commitments made by cities and regions are tagged with the theme of “Emissions Reduction” (ER) and include mitigation targets. Almost all of these targets are absolute, meaning that they aim to reduce a specific quantity of greenhouse gas emissions (typically measured in metric tons carbon dioxide equivalent) relative to a historical baseline.⁴ Only 15 of the platform’s ER commitments set emissions intensity targets that frame their goal in terms of the emissions produced relative to a measure of economic output (such as the emissions produced relative to a region’s GDP).⁵ Half of the ER targets on NAZCA set goals on an actor’s carbon emissions; nearly half of the targets set goals in terms of carbon dioxide (CO₂) emissions; and a small portion (less than 3 percent) set targets on a fuller range of greenhouse gas (GHG) emissions, including carbon dioxide, methane, nitrous oxide, and fluorinated gases.⁶

² This total number of commitments removes the number of double counted or repeated commitments recorded in NAZCA.

³ Cities and regions making individual commitments plus those making commitments through the Covenant of Mayors are included in this 17 percent global population statistic.

⁴ Herzog, T., Pershing, J., & Baumert, K. (2006). Target: Intensity. An Analysis of Greenhouse Gas Intensity Targets. World Resources Institute. Retrieved from: <http://www.wri.org/publication/target-intensity>.

⁵ Herzog, T., Pershing, J., & Baumert, K. (2006). Target: Intensity. An Analysis of Greenhouse Gas Intensity Targets. World Resources Institute. Retrieved from: <http://www.wri.org/publication/target-intensity>.

⁶ The choice of unit for reporting GHG emissions should reflect an actor’s primary source of emissions. For instance, many actors chose to focus on CO₂ since this gas accounts for approximately 65 percent of the warming impact of current human-driven GHG emissions. Activities such as deforestation, and the burning of coal, oil, gas, and other fossil fuels, produce the majority of CO₂ emissions. For other sectors, such as agriculture, other greenhouse gases, such as methane, play a key role in their activities’

More than 80 percent of the mitigation targets are focused on community-wide emissions, while the rest focused on statewide, region-wide or government operational emissions.

Over half of these 3,149 commitments (2,136 commitments from 1,936 cities and 35 regions) contribute 1.22 gigatons of carbon dioxide equivalent (Gt CO₂e) in emission reductions (1.09 Gt CO₂e from cities and 0.13 Gt CO₂e from regions).⁷ The timeframe (from base year to target year) of these commitments vary greatly, from a target spanning two years by the newly joined city Dar es Salaam in Tanzania (“Reduce CO₂e emissions from the community by 60% by 2016 based on 2014 levels”), to 60 years by many experienced cities and regions who are setting emission reduction targets for the year 2050 based on 1990 emission levels. Figure 3 illustrates the average span in years of these city and region commitments by countries.

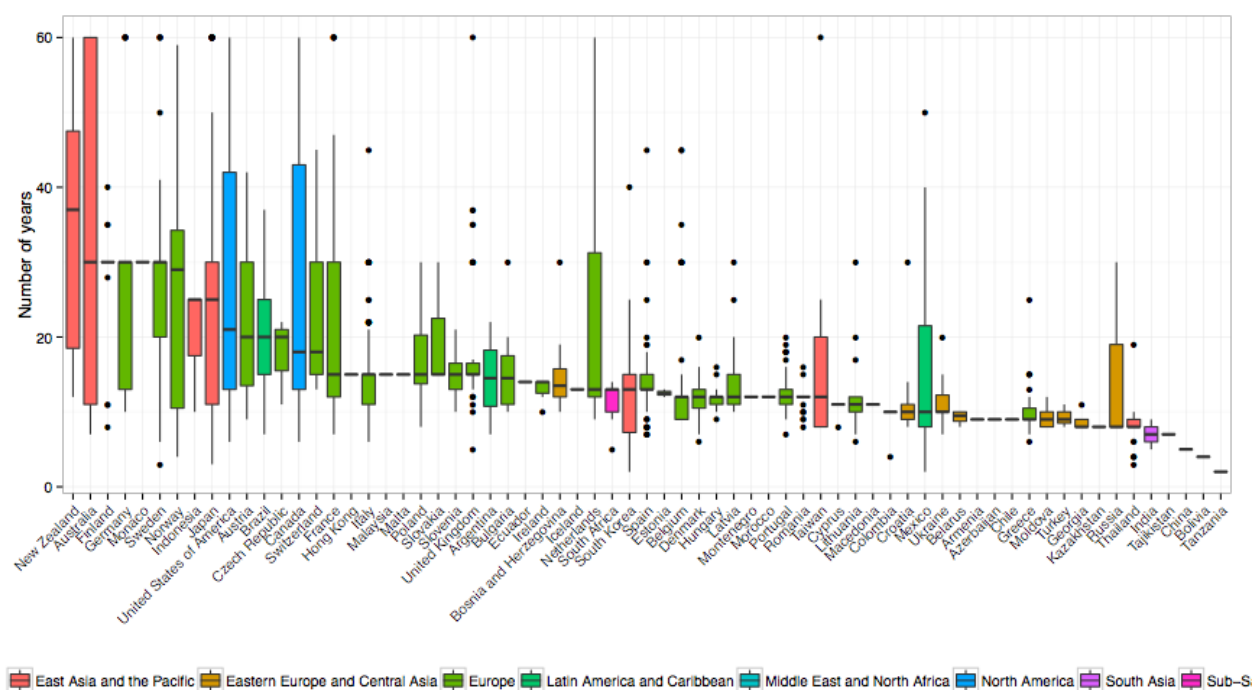


Figure 3. Average time frame (in years) of cities and regions' ER commitments by countries.

contribution to global warming(Intergovernmental Panel on Climate Change (IPCC). (2014) Climate Change 2014 Synthesis Report. Retrieved from: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf). The most robust commitments will include a comprehensive coverage of the GHGs relevant to the entire scope of their activities. (Greenhouse Gas Protocol. (2014). Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories. Retrieved from:<http://www.ghgprotocol.org/city-accounting>).

⁷ This number was calculated from only those commitments labeled 'community-wide' and does not include those limited to a specific sector.

A-2. Companies

COMPANIES RECORDING CLIMATE ACTIONS IN NAZCA

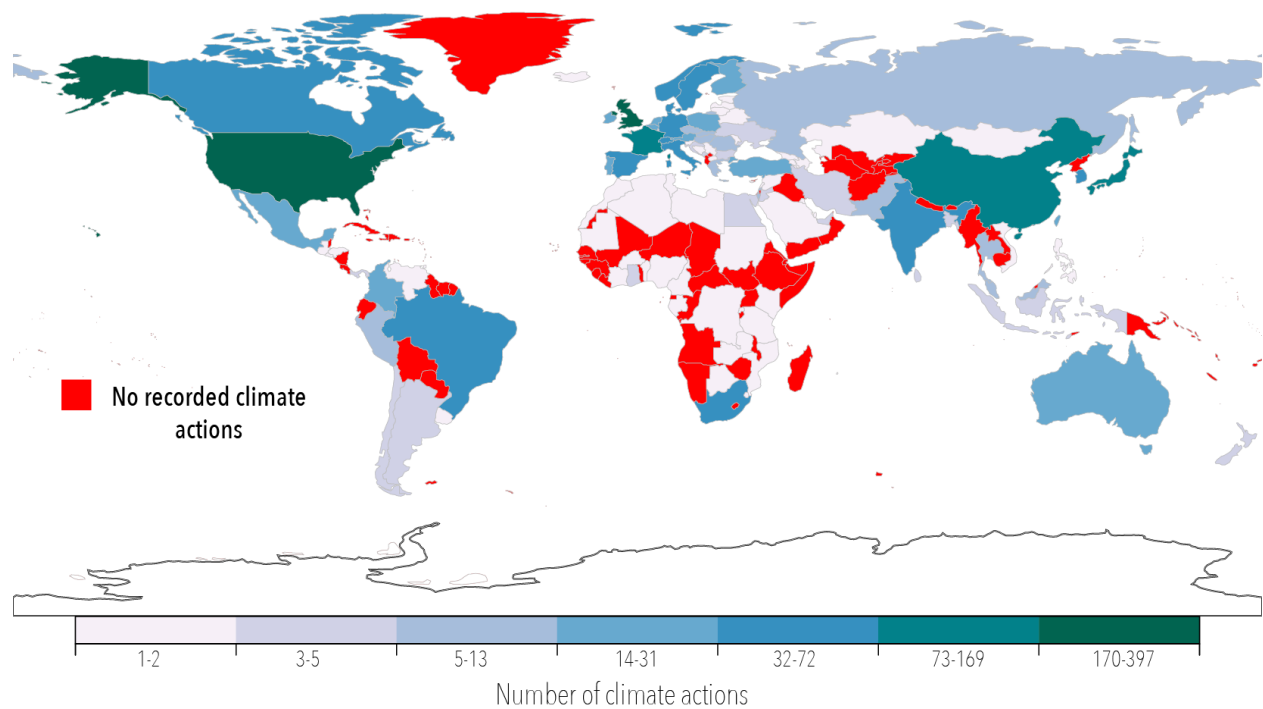


Figure 4. Geographic distribution of company climate actions globally, including both cooperative and individual commitments.

Total number of individual actions: 3,130

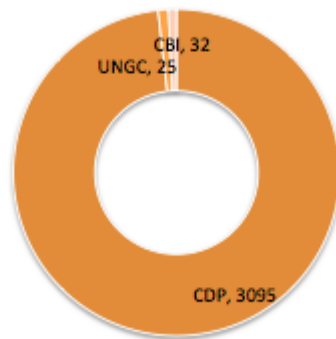


Figure 5. Breakdown of corporate commitments by data providers, including the Carbon Disclosure Project (CDP), Climate Bonds Initiative (CBI), and UN Global Compact (UNGC).

NAZCA includes 3,130 climate action commitments from 1,439 companies, which make up 45.5 percent of the pledges on the site. 636 of these companies on NAZCA are listed

as **Forbes 2000 companies**, and their total revenue is **\$23.59_ trillion** - an amount equivalent to the combined GDPs of the United States, Japan, and Australia.⁸

Companies are primarily taking climate mitigation actions through target setting, efficiency measures, and internal carbon pricing. About 60 percent of company commitments include emissions reductions (ER) targets, dominantly focused on carbon emissions (only 33 commitments target CO₂ or GHG emissions). Compared to cities and regions, many more companies are setting relative (as opposed to absolute) reductions targets; almost half of their ER commitments are measured by emissions intensity.⁹ These emissions intensity targets range from 1% to 89%, and all in different units from per net sales, per tonne of product, per full-time employee to per unit of supplied water, per square foot, and per passenger kilometer, to name a few. Figure 6 displays the average emissions intensity targets in percentage set by companies.

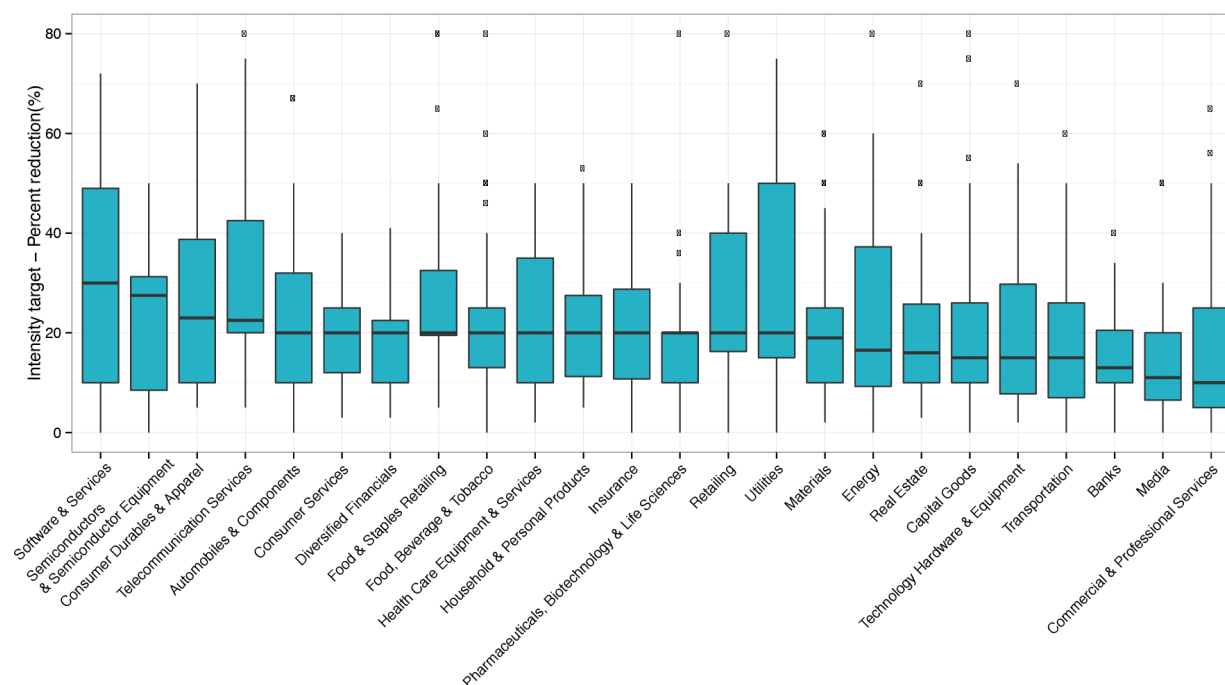


Figure 6. Corporate average emissions intensity targets in percent reduction (%) by sector.

Unlike cities and regions, NAZCA includes most of the company ER commitments' approach to achieving their pledged emissions reduction, such as "through increased energy efficiency, improved product design, and renewable energy installations and purchases,¹⁰" or "through

⁸ World Bank. (2014). National GDP data. Retrieved from: <http://databank.worldbank.org/data/download/GDP.pdf>.

⁹ In NAZCA, both emissions and emissions intensity commitments can be structured in terms of "per unit of revenue", "per unit of production", or other similar framings, so it is not always clear what "emissions intensity" refers to.

¹⁰ United Nations Framework Convention for Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/company/glaxosmithkline>.

building infrastructure optimization, renewable energy purchases, electric vehicles, and solar power installations.”¹¹

Another 20 percent of company commitments (664) set internal carbon prices, which set a “shadow price” on a ton of carbon as a way of quantifying climate change costs. Less than one-sixth of these commitments include a specific carbon price, ranging from \$0.01 to \$357.37. Units of the carbon price or locations where the price applies (especially for multinational corporations) were barely mentioned in these NAZCA commitments. According to the data provider CDP’s report *Putting a price on risk: Carbon pricing in the corporate world*,¹² however, many companies do have detailed plans of setting up internal carbon prices that are not captured on NAZCA.

Although NAZCA captures a significant portion of corporate actors, it is worth noting that many historically heavy emitters remain absent. Only 17 of the 90 fossil fuel and cement companies responsible for approximately two-thirds of global historic greenhouse gas emissions¹³ have climate commitments on NAZCA’s site. All of OPEC’s oil giants are absent from NAZCA’s roster, as are other massive energy companies in the developing world, like Coal India and PetroChina. Figure 7 summarizes Forbes 2000 companies’ participation on NAZCA, giving an indication of the levels of mobilization for climate action across different sectors.

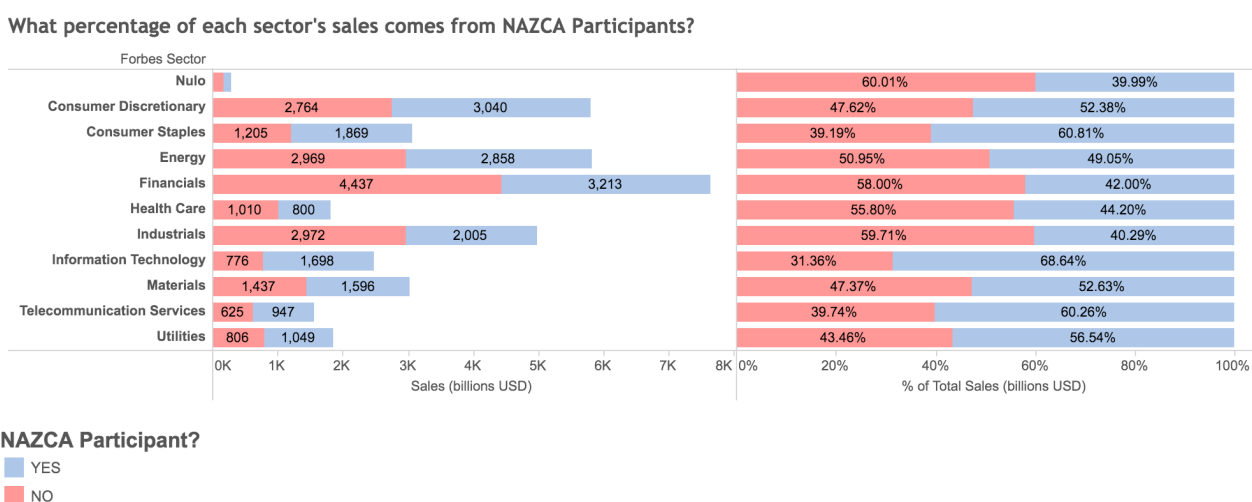


Figure 7. Participation in NAZCA, in terms of a sector’s sales, among Forbes 2000 companies. Source: Climate Action Dashboard, Yale Data-Driven Environmental Solutions Group, <http://visuals.datadriven.yale.edu/climateaction/>.

A-3. Investors and Civil Society Organizations

Total number of individual actions: 664

¹¹ United Nations Framework Convention for Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/company/osterreichische-post-ag>

¹² CDP. (2015). Retrieved from: <https://www.cdp.net/CDPResults/carbon-pricing-in-the-corporate-world.pdf>

¹³ Heede, R. Climatic Change, 122(1-2), 229-241(2014).

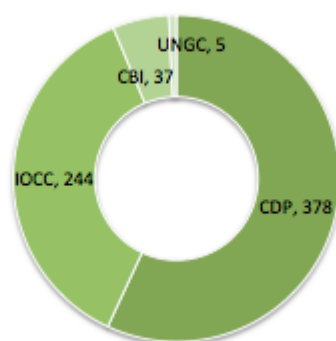


Figure 8. Breakdown of investors and civil society organizations by data provider, including the UN Global Compact (UNGC), Climate Bonds Initiative (CBI), Carbon Disclosure Project (CDP), and Investors on Climate Change (IOCC).

NAZCA includes 287 investors, making 620 individual climate actions. Slightly over one-third (250 commitments) of these individual actions commit to investing in climate-related projects or markets. The rest of investors' individual actions focus on reducing carbon footprint of business operations through methods such as energy efficiency improvement and renewable energy procurement.

17 civil society organizations (CSOs) have made 44 individual climate commitments on NAZCA, all of which focus on investment. Seven CSOs pledge to issue green bonds, while the others commit to investing in climate projects, equity and funds.

A-4. Green bonds

Cities, regions, companies, investors, and CSOs have all committed to issuing green bonds, representing a diversity of issuer and investor types and a wide range of associated investment strategies. Green bonds are fixed-income instruments whose proceeds are dedicated to environmental initiatives. They offer investors the ability to “buy AAA bonds, take zero project risk, and benefit from ring-fencing (i.e., when a portion of a company's assets or profits are financially separated without necessarily being operated as a separate entity) of the funds for green purposes, as well as the transparency and due diligence provided by the issuer.”¹⁴

Green bonds issuance commitments on NAZCA are worth \$46.8 billion - an amount equivalent to 75 percent of global climate finance flows in 2014.¹⁵ This \$46.8 billion total includes green bonds issued for climate-related projects, such as renewable energy, low carbon transport,

¹⁴ Goldman Sachs. (2014). 2014 Environmental Finance Innovation Summit Report. Retrieved from: <http://www.goldmansachs.com/our-thinking/pages/new-energy-landscape-folder/environmental-finance-innovation-summit-2014/efi-summit-report.pdf>

¹⁵ Developed countries mobilized US \$61.8 billion of public and private climate finance in 2014, according to the OECD. (Economic Co-operation and Development (OECD) & Climate Policy Initiative (CPI). (2015). Climate finance in 2013-14 and the USD 100 billion goal. Retrieved from: <http://www.oecd.org/env/cc/oecd-cpi-climate-finance-report.htm>.)

building energy efficiency and sustainable water management projects. Investment in purchasing green bonds is excluded from this figure to avoid double-counting.

NAZCA does not include details such as green bonds' issue date, maturity and outstanding amount. Cross-checking the information on NAZCA with labelled green bonds data from the Climate Bonds Initiative (CBI)¹⁶ suggests that the \$46.8 billion are most likely to be the outstanding amount of green bonds issued between 2013 and 2015. For example, German bank Rentenbank committed "USD \$90 million in green bonds issued for projects in renewable energy in North America."¹⁷ The CBI has two records for Rentenbank, including one bond with \$20.6 million¹⁸ outstanding in the bank's Renewable Energies promotional line,¹⁹ and one with \$67 million²⁰ outstanding (proceeds going towards renewable energy).²¹ Therefore, this outstanding \$87.6 million is likely rounded up to the \$90 million in Rentenbank's commitment.

Compared to the nearly \$100 trillion active in the global bond market,²² the \$46.8 billion green bonds represented on NAZCA account for less than 0.5% of the total market. Though they are not at scale yet, significant momentum has occurred in recent years in the labeled green bond market. CBI estimates that green bonds worth approximately \$11 billion were issued in 2013,²³ an amount less than one-fourth of the \$41.8 billion worth of green bonds issued in 2015.²⁴

A-5. Double Counting Issues

Overlaps Between Individual and Cooperative Commitments

Climate actions and commitments can potentially overlap, resulting in the "double counting" of effort or emissions reductions. NAZCA aims to capture the widest scope of climate actions possible, thereby creating the possibility of double counting. For instance, the most obvious example of double counting occurs between individual actions (actions specific to a city, region, business, investor, or civil society organizations) and cooperative actions, which are recorded separately on the NAZCA platform.

¹⁶ Climate Bonds Initiative (CBI). Labelled green bonds data. Accessed February 2016. Retrieved from: <http://www.climatebonds.net/cbi/pub/data/bonds>.

¹⁷ United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/company/rentenbank>.

¹⁸ Climate Bonds Initiative (CBI). (2016). Retrieved from: <http://www.climatebonds.net/bonds/200>.

¹⁹ Rentenbank. (2014). Annual Report 2014 (page 18). Retrieved from: <https://www.rentenbank.de/dokumente/euro-mtn-programm/Annual-Report-2014.pdf>.

²⁰ Climate Bonds Initiative (CBI). (2016). Retrieved from: <http://www.climatebonds.net/bonds/131>.

²¹ Climate Bonds Initiative (CBI). (30 September 2013). German AAA Rentenbank \$50m climate bond. Retrieved from: <http://www.climatebonds.net/2014/05/gothenburg-breaks-ground-77m-swedish-green-muni-german-aaa-rentenbank-50m-climate-bond>.

²² Climate Bonds Initiative (CBI). (2016). Taxonomy. Retrieved from: <http://www.climatebonds.net/standards/taxonomy>.

²³ Climate Bonds Initiative (CBI). (2016). Explaining Green Bonds. Retrieved from: <http://www.climatebonds.net/market/explaining-green-bonds>.

²⁴ Climate Bonds Initiative (CBI). (2016). Explaining Green Bonds. Retrieved from: <http://www.climatebonds.net/market/explaining-green-bonds>.

Many cities, for example, record individual climate mitigation actions but then also record the same commitments through a cooperative initiative like the Covenant of Mayors. NAZCA records the same city's commitment as both an individual and cooperative action. NAZCA includes 35 cooperative initiatives, each of which is a collection of "commitments to action that are being undertaken by a variety of companies, cities, subnational regions, investors and civil society organizations – often in partnership with countries."²⁵ NAZCA counts each actor's participation in a cooperative action as a separate commitment to climate action. That is to say, the 3,865 cooperative actions on NAZCA are not necessarily separate actions, but instead refer to the 3,865 participants of the 35 cooperative initiatives. This method of counting individual actors participating in cooperative initiatives is arguably double-counting, although in some cases, individual participants pledging with a cooperative initiative may make separate and distinct commitments as a result.

Because the content of each participant's cooperative commitment is not included on NAZCA, it is not straightforward to distinguish an actor's individual and cooperative actions. The example of Baden-Württemberg region in Germany demonstrates the difficulty of determining the overlap between individual and cooperative commitments. NAZCA includes 8 climate actions from this region - two cooperative and six individual pledges. This region participates in the Under 2 MOU cooperative action, and, as one of its founding signatories, has pledged that "by 2020 Baden-Württemberg will reduce GHG emissions by 25% and by 2050 by 90% compared to 1990."²⁶ Meanwhile, one of Baden-Württemberg's individual actions is to "reduce region-wide CO₂e emissions by 90% by 2050 based on 1990 levels," which is exactly what the region promised to do in its cooperative action.

This overlapping problem between individual and cooperative actions is particularly true with the Covenant of Mayors, a cooperative initiative²⁷ with 1,726 city participants and 8 region participants represented on NAZCA, that simultaneously acts as a data provider²⁸ of 1,700 individual commitments made by cities and regions. Each commitment made by participants in the Covenant of Mayors is listed twice - once in terms of a participant's individual action, and once in terms of a participant's membership in a cooperative initiative.

For instance, the Spanish city of Albox is a member of the Covenant of Mayors. NAZCA currently lists the following two climate actions²⁹ taken by the city:

²⁵ United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/cooperative-initiatives>.

²⁶ Under 2 MOU. (2015). Appendix: Baden-Württemberg. Available: <http://under2mou.org/wp-content/uploads/2015/05/Baden-Wurttemberg-appendix-English.pdf>.

²⁷ United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/cooperative-initiative/covenant-of-mayors/all-themes>.

²⁸ Covenant of Mayors. (2016). Retrieved from: http://www.covenantofmayors.eu/index_en.html.

²⁹ United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/city/albox/spain>.

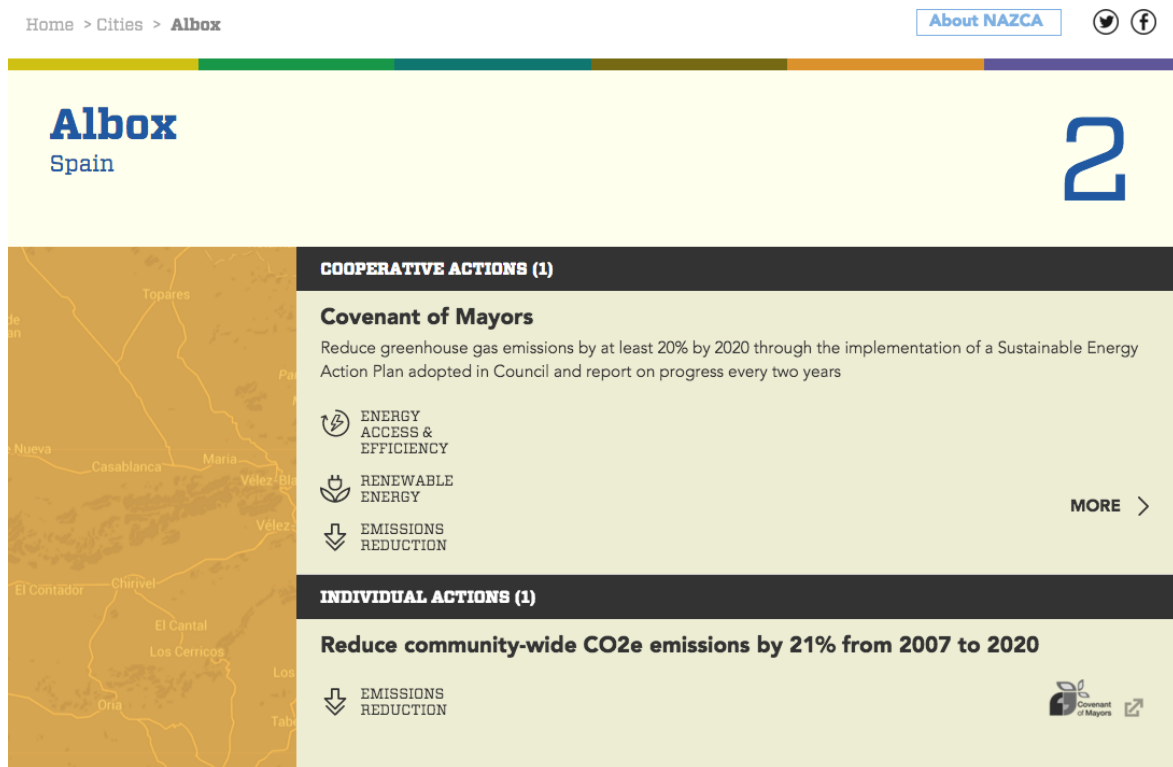


Figure 9. Screenshot of Albox’s climate commitments as recorded on the NAZCA platform. Source: NAZCA, 2016.

Participants in the Covenant of Mayors pledge to “reduce greenhouse gas emissions by at least 20 percent by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years.” Albox City specifies their action plan³⁰ on the Covenant of Mayors’ website:

³⁰ Covenant of Mayors. (2016). Retrieved from: http://www.covenantofmayors.eu/about/signatories_en.html?city_id=791&seap.

Covenant of Mayors
Committed to local sustainable energy

About Actions Participation Support Media Search... OK English (en)

Signatories

Albox

Overview Action Plan Support

Action Plan in a Nutshell

Date of formal approval: 2011-04-11
Overall CO₂ emission reduction target: 21%

Sustainable Energy Action Plan Documents

Title	Size	Language
Sustainable Energy Action Plan	5266163 kB	en

Key Results of the Baseline Emission Inventory

Baseline year: 2007

1) Greenhouse gas emissions and final energy consumption per capita

Emission factor	tonnes CO ₂ equivalent/capita	MWh/capita
IPCC	7	21.8

Figure 10. Screenshot of Albox's commitment as recorded on the Covenant of Mayors' website. Source: Covenant of Mayors, 2015.

The "Action Plan in a Nutshell" section displayed in Figure 10 shows that the city committed to reduce its overall CO₂ emission by 21 percent; and the "Key Results of the Baseline Emissions Inventory" section lists 2007 as a baseline year. It is clear that Albox' individual action, "Reduce community-wide CO₂e emissions by 21% from 2007 to 2020," is also the pledge the city has made through the Covenant of Mayors cooperative initiative.

Corporate commitments may also overlap on NAZCA, and the picture can be even messier than it is for cities and regions. Almost all individual commitments made by companies (more than 98 percent, 3,095 out of 3,151 commitments) come from CDP's database. However, some of the cooperative initiatives on NAZCA, such as Business Leadership Criteria on Carbon Pricing, Caring for Climate and Cement Sustainability Initiative, also draw data from CDP. It is almost certain that there are repetitions, where the same commitment is listed as both an individual action and cooperative action on NAZCA. Yet only a portion of CDP data is presented on NAZCA, which makes the double counting issue among companies more of a case-by-case problem. It is necessary to dig into specific documents on each cooperative initiative's own website to understand whether seemingly distinct actions on NAZCA are actually the same.

One example of this potential double counting is illustrated through the CDP-initiated Business Leadership Criteria on Carbon Pricing. Its participants collectively agree to “set an internal carbon price, publicly advocate and communicate on progress.” This means the French company Veolia, as an example, has committed to set an internal carbon price since it joined this cooperative initiative. NAZCA also includes a number of individual actions from Veolia. One of these commitments, tagged with the theme “Use of Carbon Price,” is specified as a commitment to “use an internal carbon price,” according to CDP. The difference between the company’s commitment to “set an internal carbon price,” through its participation within the Business Leadership Criteria on Carbon Pricing, and its individual pledge to “use an internal carbon price” is negligible, suggesting overlap between the two commitments. Given that CDP is the data provider for most individual commitments, it is not surprising to expect a high level of double counting between cooperative actions made under the Business Leadership Criteria on Carbon Pricing and individual actions tagged with “Use of Carbon Price.”

Another cooperative initiative, the Cement Sustainability Initiative (CSI), is a global effort by 25 major cement producers who have committed to “reduce CO₂ emissions from cement production and report annually on progress including independent third party assurance.” CSI has 24 participants on NAZCA (only Siam City Cement from Thailand is missing), and based on its Agenda for Action,³¹ each member company “will set emissions targets on relevant materials and report publicly on progress relative to those targets by 2006.” With this understanding, individual actions to reduce emissions from cement production by CSI members, such as to CEMEX’s commitment to “reduce the emissions intensity of direct operations by 25% per tonne of cement by 2015 through fuel switching and onsite renewable energy,” or LafargeHolcim Ltd’s pledge to “reduce emissions by 33% per ton of cement by 2020,” are likely requirements for CSI members and should not be double-listed as individual commitment as well.

Caring for Climate, a cooperative initiative launched by the United Nations, demonstrates multiple levels of overlaps. Caring for Climate is jointly convened by the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Environment Programme (UNEP), and United Nations Global Compact (UNGC),³² one of NAZCA’s seven data providers. It utilizes the CDP reporting process (mainly CDP’s Supply Chain Module) to collect its data.³³ ³⁴ Participants commit to “improve energy efficiency, reduce [their] carbon footprint and report publicly and annually on progress.”³⁵ It is highly likely that individual actions tagged with “Energy access & efficiency” and “Emissions reduction” by participants of Caring for Climate are counted multiple times.

Overlaps In Attempts to Aggregate Climate Action

³¹ World Business Council for Sustainable Development. (2002). Cement Sustainability Initiative (CSI). Retrieved from: <http://www.wbcsdcement.org/pdf/agenda.pdf>.

³² Caring for Climate. Overview of Caring for Climate. Retrieved from: <http://caringforclimate.org/about/>.

³³ United Nations Environment Programme (UNEP) & United Nations Global Compact (UNGC). Caring for Climate Reporting Guidance. Retrieved from: https://www.unglobalcompact.org/docs/issues_doc/Environment/climate/C4C_Reporting.pdf.

³⁴ United Nations Global Compact (UNGC). *How do the C4C commitments and CDP questionnaire map together?* Retrieved from: https://www.unglobalcompact.org/docs/issues_doc/Environment/climate/CDP_Mapping_Guidance.pdf.

³⁵ United Nations Global Compact (UNGC). Retrieved from: <https://www.unglobalcompact.org/>.

Aside from overlapping issues between individual and cooperative actions, efforts to aggregate climate actions can also lead to double counting. Investment-related commitments are especially prone to these kinds of overlaps. Even if investment commitments are homogenous in pattern, it may not be possible to calculate an aggregate total of climate investment funds, due to potential overlaps between asset owners (i.e., insurance companies, pension funds, and endowments) and asset managers (i.e., mutual funds and money managers).³⁶

To understand potential overlaps between investment actions, more transparency and information on who is managing the fund is needed. Investors on Climate Change (IOCC) specifies whether an investment is managed internally (by an asset owner) or externally (by an asset manager), however this information is not included in NAZCA.³⁷ For example, NAZCA records that the Yearly Meeting of the Religious Society of Friends in Britain committed up to \$10m USD invested in wind energy in the United Kingdom (UK). What NAZCA does not mention is that the investment is managed externally by Rathbone Investment Management Limited, an asset management arm of Rathbone Brothers plc. A subsidiary of Rathbone Brothers plc., Rathbone Unit Trust Management Limited, also has a commitment listed on NAZCA: “Up to \$10m USD invested in a green bond in the UK.” It is possible that Rathbone Unit Trust Management Limited, as an asset manager, invested up to 10 million of the asset owned by Yearly Meeting of the Religious Society of Friends in Britain in a green bond issued for wind energy projects. NAZCA includes many similar commitments where the investment is managed externally, and both the asset manager and the asset owner are listed as actors.

In the case of cities and regions, many emissions mitigation commitments cannot be aggregated due to the fact that the jurisdiction of cities and regions overlap. In the United States, for example, NAZCA includes climate actions from 156 cities and 18 regions. Many of these 156 cities are located within and overlap with these 18 regions. For instance, cities such as Albany, Berkeley, Fremont, Los Angeles, Oakland, Palo Alto, Richmond, San Diego, San Francisco, and San Jose are all located in California. According to CDP, one individual commitment made by the state of California is to “reduce GHG emissions to 80 percent below 1990 levels by 2050.” Meanwhile, the city of San Francisco, according to CDP and the carbonn Climate Registry, committed to “reduce community-wide CO₂e emissions by 80% from 1990 to 2050.” Transparency regarding how these sub-national and state-level emission mitigation commitments align is needed to understand the total impact of these entities. There is a high likelihood of overlap in the emission reduction sources between San Francisco and California, for instance, given that the former is a major city in the latter.

In rare cases, a district of a city is listed on NAZCA in parallel to the city itself, as is the case with Budapest XVIII kerület Petszentiőrinc-Pestszentimre Önkormányzata (a district of

³⁶ The 115 green bonds issuance commitments imported from the Climate Bonds Initiative (CBI) fall into one single pattern: “USD ____ (numeric amount) million green bonds issued for projects in ____ (project type) in ____ (location of the project) by ____ (investment management)”. Similarly, the 244 commitments drawn from the data provider Investors on Climate Change (IOCC) share this pattern: “____ (numeric amount) USD invested in ____ (project type) in ____ (location).”

³⁷ Global Investor Coalition on Climate Change. Retrieved from: <http://globalinvestorcoalition.org/>.

Budapest) and the city of Budapest. It is not clear why District XVIII is listed separately while the other 22 districts in Budapest are not.

Overlaps From Technical Design Flaws

Last but not least, technical design flaws in the NAZCA website can make it difficult to accurately measure the total number of climate actions captured by the platform. Many commitments appear multiple times, and at least 42 commitments are repetitive. For example, the Belgian city of Gingelom has eight actions listed on NAZCA (Figure 11). Six of these commitments reflect the same Covenant of Mayors commitment. The city's two other commitments both pledge to "reduce community-wide CO₂e emissions by 21% from 2008 to 2020." If the technical error were fixed, the number of actions taken by Gingelom would drop to two. With an even closer look at the content of its actions, Gingelom has only one unique commitment, because its individual action is actually the city's specific action plan under the Covenant of Mayors.

Home > Cities > Gingelom

About NAZCA

Gingelom
Belgium

8

COOPERATIVE ACTIONS (8)

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
ENERGY EFFICIENCY
MORE >

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
ENERGY EFFICIENCY
MORE >

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
RENEWABLE ENERGY
MORE >

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
RENEWABLE ENERGY
MORE >

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
EMISSIONS REDUCTION
MORE >

Covenant of Mayors
Reduce greenhouse gas emissions by at least 20% by 2020 through the implementation of a Sustainable Energy Action Plan adopted in Council and report on progress every two years
EMISSIONS REDUCTION
MORE >

INDIVIDUAL ACTIONS (2)

Reduce community-wide CO₂e emissions by 21% from 2008 to 2020
EMISSIONS REDUCTION

Reduce community-wide CO₂e emissions by 21% from 2008 to 2020
EMISSIONS REDUCTION

Figure 11. Screenshot of the Belgian city of Gingelom's commitments as recorded on the NAZCA platform. Source: NAZCA, 2016.

B. Data providers

NAZCA records primarily individual commitments but also includes data for 35 cooperative commitments. Section B-1 describes the major data sources for individual and cooperative commitments, followed by a synthesis of major findings in analyzing individual climate action

data providers (Section B-2). Section B-3 then provides recommendations for alternative data providers that could lend additional data to NAZCA or provide insights to enhance it.

B-1. Overview of data providers

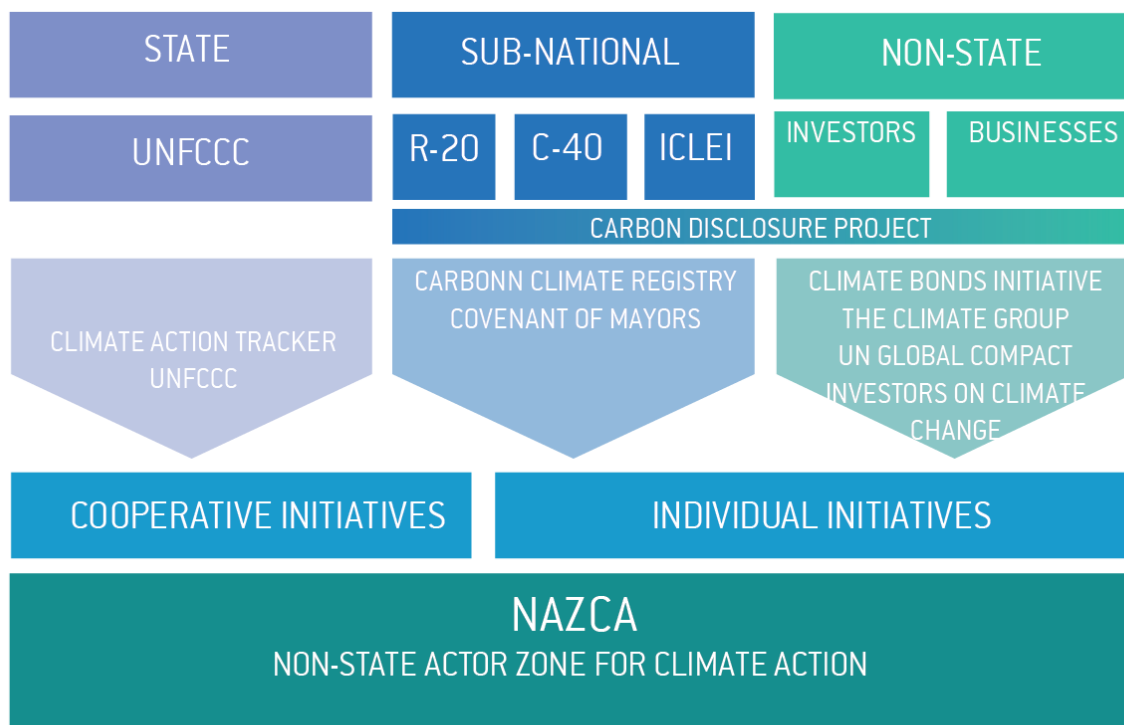


Figure 12. Generalized flow diagram representing the relationship between reporting actors (nation-states, sub-national, and non-state), the seven NAZCA data providers, and NAZCA. Source: authors.

NAZCA is a ‘meta-registry’ or a ‘registry of registries,’ meaning that it does not directly collect data from an individual reporting entity (e.g., city or company) (Figure 12). Instead, it relies on a set of seven ‘core data providers’ that have been selected “due to an established track record of data management and assessment” and “due to the fact that they can track commitments over time to ensure progress.”³⁸ New entities wishing to record climate actions cannot do so directly through NAZCA; instead, they must interface directly with one of NAZCA’s seven data providers, who have the ability to vet a climate action and ensure it meets established criteria of the registry. The UNFCCC, via an internal team focused on NAZCA, then works directly with the seven data providers to select a sub-sample of a data provider’s participants to “[showcase] action at scale.”³⁸ Because NAZCA’s aim is to demonstrate the range of climate actions being taken, the portal represents a sample of commitments that “are sufficiently granular to provide some context and detail to what is actually happening” but “also at a scale that is sufficiently significant to have an impact on mitigation and adaptation.”³⁸

³⁸ UNFCCC (2016). About NAZCA. NAZCA. Retrieved from: <http://climateaction.unfccc.int/about>. Last accessed: April 21, 2016.

NAZCA adheres to four data principles when selecting and filtering data:

- **REPORTING:** Commitments should be reported at a minimum of once every two years, ideally once per annum.
- **SCALE:** Commitments included in the NAZCA portal should be strategic inspirational actions that are forward-looking, quantifiable and time-bound, and occur at a sufficient scale to have an impact on mitigation or adaptation. Links to underlying data sources should always be provided.
- **CONSISTENCY:** The data should be presented in a comparable format.
- **ACTION:** The commitments featured on NAZCA are action-oriented. The portal does not feature calls to action by third parties such as governments.³⁹

The specificity and level of adherence to these criteria vary. While most individual commitments on NAZCA are forward-looking, quantifiable, action-oriented, and time-bound, the definition of what constitutes a sufficient scale to realize an impact on mitigation or adaptation is unclear. The criteria for comparable data is also difficult to assess; more details about the specific information each type of actor and/or action area should entail would make this easier to assess. On the NAZCA site, commitments are framed in generally concise and comparable ways, but the more detailed information required by data providers varies significantly.⁴⁰ Many data providers mirror NAZCA's requirement that data be submitted every two years. For data providers that have looser guidelines, NAZCA may be manually filtering commitments to meet these criteria, but there is no feasible way to verify this.

NAZCA's struggles to fully realize these data principles likely stems from the vast range of climate actions and actors NAZCA seeks to incorporate. For instance, an ambitious climate commitment in a small city might not have significant impact on a larger municipality's adaptation or mitigation efforts. For this and for similar issues, where absolute or binary criteria may not be appropriate, access to more detailed data to contextualize commitments is necessary. For instance, the scale of a community's climate action plan might be evaluated in terms of the percentage of emissions addressed by its climate action plan. Moving towards this approach would require additional capacity to enable greater access to and analysis of data. Setting these thresholds could also be politically fraught, and would likely require significant coordination between existing networks of climate action.

Individual Commitments

NAZCA draws from seven data providers, which themselves represent platforms that record climate actions from reporting members. The figure below summarizes the total of individual commitments coming from each data provider.

³⁹ Non-state Actor Zone for Climate Action (NAZCA) Flyer. (2015). I. Ponce, Personal Communication, February 19, 2016.

⁴⁰ For a more in-depth comparison of the structure and components of commitments made across NAZCA's 11 action areas, and the ability to aggregate these commitments, please see Section C).

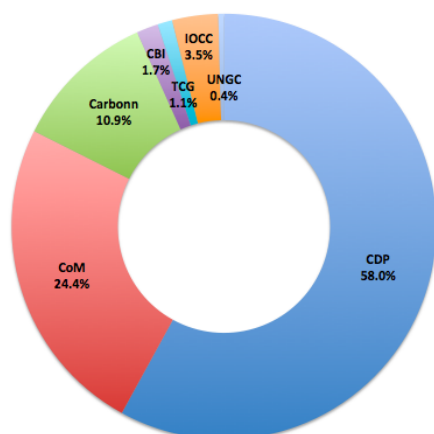


Figure 13. Individual commitments in NAZCA by data provider, including Compact of Mayors (COM), Carbon Disclosure Project (CDP), The Climate Group (TCG), Carbonn Climate Registry, Investors on Climate Change (IOCC), Climate Bonds Initiative (CBI), UN Global Compact (UNGC) .

Some data providers focus on specific types of entities, for example, participants on IOCC are exclusively investors. Other data providers record a broader range of actors, as in the case of CDP, where cities, regions, companies and investors are all active. Table 1 provides a summary of each NAZCA data providers' participants type and total, geographic coverage, their original datasets and indicators included in those original datasets.

Name	Entity	# of participants by entity	Geography	Data provider's dataset	Link	Indicators
Carbonn	Subnational regions	608 cities, states and regions (as of 1/27/2016)	62 countries	Sub-national greenhouse gas (GHG) reduction commitments, emissions inventories, and climate mitigation or adaptation actions	http://carbonn.org/	population, economy, GDP per capita, region, geography, country/territory, community type, commitments, performance, actions. For both communities and governments: CO2 reduction target, CO2e reduction target, carbon intensity target, renewable energy target, energy efficiency target, and sectors of these targets.
CDP	Companies, cities and subnational regions	Over 2,400 publicly traded companies responded to CDP in 2014	Global four regions - Europe, North America, Asia Pacific, and Africa	Searchable portal of questionnaire responses (supply chain; climate change; water disclosure) from companies and cities	https://www.cdp.net/en/en-US/Results/Pages/response.aspx	Example - Apple's climate change response: https://www.cdp.net/sites/2015/65/865/Climate%20Change%202015/Pages/DisclosureView.aspx . CDP sections are as follow: 1. Governance 2. Strategy 3. Targets and Initiatives (including details of initiatives implemented) 4. Communication 5. Climate change risks 6. Climate change opportunities 7. Emissions methodology 8. Emissions data 9. Scope 1 Emissions Breakdown 10. Scope 2 Emissions Breakdown 11. Energy 12. Emissions performance 13. Emissions trading 14. Scope 3 Emissions

Climate Bonds Initiative	Subnational regions	53 investors - need to further separate cities/regions/investors	12 countries	Labeled green bonds data	http://www.climatebonds.net/cbi/public/data/bonds	Bond name, amount issued, issue date, maturity, second opinion, blog, reporting
Covenant of mayors	Subnational actors (specifically cities)	6,732 states and regions	European and North African (aiming to expand to global reach)	Signatories' status in moving through the 3 steps of the data submission process (and the documents associated with each step's requirements submitted by signatories)	http://covenantofmayors.eu/index_en.html	For all signatories: country, population, status [in data submission process], population, adhesion [date joined Compact]. For Monitoring Action Plans: country, latest submission year, population, CO2 target by 2020 [% reduction]. For SEAPs: country, year, CO2 target by 2020 [% reduction], SEAP status [accepted, pending, submitted].
Investors on climate change	Investors	400 investors in 19 initiatives	Global	Only Low Carbon Registry is included on NAZCA	http://globalinvestorcoalition.org/forum-registry/	Investor name, type (broadband, hydro, etc.), value (USD), destination, managed (internally or externally and by whom), current or commitment, fund, listed or not, and the link to details
The Climate Group	Subnational actors (specifically states, regions, and provinces)	44 states and regions	Global	Standardized GHG inventory (re-submitted every 2 years)	http://www.theclimategroup.org/what-we-do/programs/compact-of-states-and-regions/	Country, population, GDP, land area, population, type of target (absolute, intensity, or BAU), base year, target year (if applicable to type of target). Other indicators also collected through inventories.
UN Global Compact	Companies and investors	8,000+ companies; 4,000+ non-business	Global - 170 countries	A searchable list of all participants (Need to click on each participant to read their letter of commitment)	https://www.unglobalcompact.org/what-is-gc/participants	A company overview includes: Country, Org. Type (SME/Local NGOs etc.), Sector, Global Compact Status, Number of Employees, Ownership type, Letter of Commitment, Date joining the platform Caring for Climate: Business Leadership on Carbon Pricing Science-Based Targets Climate Adaptation Responsible Corporate Engagement on Climate Change Policy Transparency and Disclosure

Table 1. Overview of NAZCA's core data providers.

Cooperative initiatives

Cooperative initiatives, which bring cities, regions, companies, investors, civil society organizations and/or countries together to tackle a cross-cutting issue, act as data providers for the entities participating in these initiatives. The 35 cooperative initiatives (Box 1) represented

on NAZCA are members of the Lima Paris Action Agenda (LPAA), a joint undertaking of the Peruvian and French COP presidencies, the Office of the Secretary-General of the United Nations, and the UNFCCC Secretariat, which aims to support and mobilize state and non-state collaboration on climate action.⁴¹

A number of key criteria govern an initiative's inclusion in the LPAA. To join, an initiative must:

- Be cooperative, inclusive, open and regionally-balanced.
- Be ambitious, setting short- and long-term quantifiable targets for transformative actions, guided by the goal of reaching a pathway that caps global warming at 2°C and enables a resilient response to climate change.
- Be science-based, addressing a concrete impact of climate change mitigation or adaptation issues to move the world towards a resilient and below 2°C pathway.
- Have the capacity to directly deliver and implement commitments.
- Showcase the implementation of existing commitments and demonstrate a sufficient level of maturity in prior to the Paris Climate Conference.
- Be ready to follow up and report on implementation.⁴²

Box 1. The 35 Cooperative Initiatives Recorded in NAZCA

- Africa Clean Energy Corridor Initiative
- Bonn Challenge
- Business Leadership Criteria on Carbon Pricing
- C40 Cities Clean Bus Declaration
- Carbon Neutral Cities Alliance
- Caring For Climate
- Cement Sustainability Initiative
- Cities Climate Finance Leadership Alliance
- Compact of Mayors
- Compact of States and Regions
- Covenant of Mayors
- Divest-Invest Global Movement
- en.lighten Initiative
- Global Energy Efficiency Accelerator Platform
- Global Green Freight Action Plan
- Low-Carbon Sustainable Rail Transport Challenge
- Montréal Carbon Pledge
- Oil & Gas Methane Partnership
- Portfolio Decarbonization Coalition
- Public Transport Declaration on Climate Leadership

⁴¹ United Nations Framework Convention on Climate Change (UNFCCC). (2015). About the Lima-Paris Action Agenda. Retrieved from: <http://newsroom.unfccc.int/lpaa/about/>.

⁴² United Nations Framework Convention on Climate Change (UNFCCC). The Lima-Paris Action Agenda. Briefing on the occasion of ADP 2.10, August 15, 2015 - September 4, 2015. Retrieved from: http://newsroom.unfccc.int/media/408544/lpaa_-_briefing_at_bonn_session_-_02_sep_15.pdf.

- RE100
- Remove commodity-driven deforestation
- Renewables LCTPi
- Science based targets
- SIDS Lighthouses Initiative
- The 1-in-100 Initiative
- The New York Declaration on Forests
- Under 2 MOU
- United for Efficiency
- Urban Electric Mobility Initiative

This analysis focuses on individual initiatives, because of the distinction between the way individual and cooperative initiatives are integrated into NAZCA (detailed in Appendix I). As Section A-5 details, many individual and cooperative commitments overlap, which mean an actor's commitment is listed twice, once as an individual action, and once as part of the actor's participation in a cooperative initiative. Additionally, while individual commitments can be assessed, in part, through the minimum requirements of their data providers, each cooperative initiative acts as its own data provider, sometimes reporting through an existing platform, such as CDP or the carbonn Climate Registry, and sometimes reporting through independent means. Cooperative initiatives, including those identified through the LPAA, are being considered post-Paris as a tool for mobilizing key actors in a coordinated way (suggestions to inform these efforts are outlined in Section E).

B-2. Existing data providers and schemes

Detailed information on how each of NAZCA's seven data providers collect data, track commitments and verify them, demonstrate innovation and best practices, and show need for improvement is available in the Appendix. These overviews reflect publicly-available data on each organization's approach, as well as comments and feedback from these platforms directly. This section provides a synthesis of the findings from data providers' efforts to collect, track, and verify data, as well as the challenges and best practices that emerged from their assessment.

Data Collection

Each data provider sets up their procedures to encourage voluntary reports from actors, or to collect relevant information on their own. With the exception of the Climate Bonds Initiative (CBI), all data providers are all platforms that request voluntary submission and reporting. For instance, the Covenant of Mayors accepts sub-national governments into its network if the signatory fulfills its pledge to: (1) develop a baseline emissions inventory and Sustainable Energy and Climate Action Plan, (2) implement and monitor the Sustainable Energy and Climate Action Plan; and (3) regularly submit implementation reports.

Instead of gathering self-reported information through a membership process, the CBI collects its own data and, as a result, tends to possess a more complete dataset. The CBI consolidates

data from public sources, such as bond prospectuses and public statements, as well as from private interviewers with industry players. All self-labeled green bonds that meet CBI's criteria for inclusion⁴³ are reflected in its dataset.

Commitment Tracking and Verification

While data providers set up procedures to filter commitments, as voluntary initiatives, they are not performance or assessment tools, and most do not independently verify the information submitted to their platforms. Many data providers, while they do not directly assess the information provided to them, track the transparency and comprehensiveness of the data that their entities submit. CDP, for example, does not independently verify commitments, but produces metrics such as CDP Disclosure score and Climate Disclosure Leadership Index to demonstrate company transparency on climate change, and to measure whether and how well a company responds to questions in the questionnaires they sent out. Yet these scores are not measures of how green a company or how trustworthy a commitment is.

The CBI and the Covenant of Mayors (CoM) allocate more resources to tracking data. The CBI reviews every labeled green bond's disclosure report annually to make sure their proceeds are going to green projects as the issuer claimed. The CoM requires the submission of Sustainable Energy and Climate Action Plans (SECAPs) submitted by signatories, which the European Commission's Joint Research Centre reviews to ensure the plan's adherence to the CoM's eligibility criteria and its data coherence. No independent validation of these materials, however, is orchestrated or required by the CoM. In other words, the CoM reviews every Sustainable Energy and Climate Action Plan for its inclusion of certain criteria, such as a baseline emissions inventory and the approval of the relevant municipal council, but does not verify the information included in the plan itself.

Efforts to track the implementation of commitments also vary across NAZCA's data providers. The CoM and CDP gather self-reported information on actor's implementation of their commitments (the CoM for all reporting governments, the CDP for several commitment types, including corporate emissions reduction, renewable energy, and water resiliency pledges), but this data is not verified. The CBI's labelled green bonds database aims to track all self-labelled green bonds, though CBI does not provide formal opinions on whether it agrees with these labels ("implementation" in the context of the CBI refers to the allocation of funds to green projects, rather than to the implementation of the projects themselves).

The cCr and The Climate Group require greenhouse gas inventories that could potentially facilitate a monitoring of progress at an individual level (for a particular government), and release reports that provide insights into trends in implementation and tracking across their networks, but do not provide a holistic or automated way to track performance through their platforms. The UNGC explicitly notes that it is not an performance or assessment tool.

⁴³ The three criteria for inclusion in CBI's database include: (1) the bonds were publicly documented to fund projects that have positive environmental and/or climate benefits; (2) 100 percent of the proceeds of the bonds go to eligible green projects; and (3) these eligible projects fit into high-level categories of "green" as defined by the Climate Bonds Taxonomy. Retrieved from: <https://www.climatebonds.net/standards/taxonomy>.

Innovation and Best Practices

NAZCA's data providers have developed a number of innovations and best practices that could create even broader benefits if adopted more widely. Differentiated reporting structures are helpful for engaging the wide range of non-state actors. For instance, CDP runs multiple programs that enable collection of different types of environmental data (e.g., climate change, water and forest risk commodities), from different types of stakeholders (e.g., companies and city governments), and for different purposes (e.g., investor engagement, supply chain engagement and organizational learning). Similarly, the United Nations Global Compact (UNGC) recognizes the different level of each participant's progress by establishing three sets of reporting evaluations: GC Advanced (reporting the company's implementation of advanced criteria and best practices), GC Active (for companies aiming to achieve the platform's minimum requirements), and GC Learner (for companies that do not meet one or more of the platform's minimum requirements). The Covenant of Mayors (CoM) platform helps foster multi-level governance, by encouraging different levels of government – city, regional, state, and national governments – to join in coordination with each other. Typically, a national government will pledge financial and technical support for a city's comprehensive climate action plan.

Many data providers are also making progress towards standardized reporting guidelines. The world's largest repository of GHG emissions and energy use database, which was established by CDP, has shaped the GHG reporting structure used across the corporate world. The Compact of States and Regions requires the use of standardized GHG reporting templates, which helps ensure some level of coherence and compatibility between the many different reporting organizations. The CBI helps cut through the opacity and uncertainty in the green bonds market, by identifying eligible green projects, and convening scientists and industry experts to provide green definitions⁴⁴ that are sector-specific.

Many of NAZCA's data providers also draw strength and credibility from their deep ties and long history in promoting and tracking climate action within their respective areas of focus. CDP's leadership in engaging the private sector is evident from its backing from blue chip investors including HSBC, JPMorgan Chase, Bank of America, Merrill Lynch, and Goldman Sachs, as well as corporations such as WalMart, Tesco, Cadbury Schweppes, Procter and Gamble, and many others. This credibility and support within the sector enables CDP to expand its reach, and leverage the resources of the private sector. The IOCC's Low Carbon Investment Registry established the first database of activities related to the full range of low carbon investments made by institutional investors, while the CBI developed the first public green bonds dataset including both basic bond reference data and second party opinions.

Areas of Improvement

Comparing NAZCA's data providers highlights a number of common challenges. Across the board, more interactive and detailed access to data, and a greater contextualization and aggregation of existing information is needed. In the case of the United Nations Global Compact

⁴⁴The Climate Bonds Initiative (CBI). The Climate Bonds Standard. Retrieved from: <http://www.climatebonds.net/standards>

(UNGC), most of the data is qualitative and stored in the format of PDF reports. Without a searchable portal, it is hard to understand the scale of action, or to compare participants' performance. Search functions that allow users to hone in presence or absences of key kinds of data would encourage quality assurance procedures. For the carbonn Climate Registry (cCR) and The Climate Group (TCG), additional details on the verification processes, and the percentage of verifications conducted by a third party, would be helpful in further assessing the reliability of this data. While the CoM already provides detailed individual and aggregate summaries of data, it could strengthen its database even further by rewarding or recognizing signatories that independently verify their information, to help highlight and encourage this practice. If the Investors on Climate Change (IOCC) develops the capacity to verify and track investment commitments, it could serve as a great tool for asset managers or investment advisors about investment products, vehicles, strategies or constitutes investment advices. The CDP could improve the data availability it provides to non-investors, since currently only signatory investors have access to the organization's full database.

The cross-cutting lessons and vulnerabilities from these data providers inform the suggestions and recommendations outlined in Sections C and E, and a more detailed description of each data provider's approach is described in Appendix I. Section B-3 provides examples of databases that could be incorporated in the NAZCA platform, to fill data gaps or help inform the platform's development.

B-3. Potential new data partners

NAZCA could be further enhanced by both adding new data providers to the platform. Table 2 outlines a list of potential data providers that could be incorporated into NAZCA. Most of these suggested data providers focus on more fully capturing climate action from investors and businesses. Other data gaps, such as the need to better capture climate action focused on resilience, or climate action taking place in developing countries, will require broader changes in the overall landscape of data providers and climate action networks. For instance, one way to address the dearth of coverage of city and region climate action in the Global South would be for NAZCA to help support efforts for existing data providers to work with municipal governments in developing nations, to identify ways to gather climate information without overburdening these governments' human or financial resources.

The recent rush of climate action commitments around the Paris Climate Conference has also generated a list of new actors committing to climate action, that could evolve into networks or commitments that meet the guidelines of the NAZCA platform. For instance, the Alliance of Peaking Pioneer Cities and American Campuses Act on Climate networks could grow NAZCA's inclusion of climate action from the developing world, and its list of civil society organizations, if they developed data reporting and verification processes that aligned with the existing network of NAZCA data providers. Developing systematic processes to integrate promising networks into NAZCA's network of data providers and/or into the LPAA could support the platform's growth.

Many national governments have established or are considering implementing mandatory climate reporting schemes that could also feed into NAZCA. Fifteen of the G-20 economies implement some form of a mandatory reporting process for information related to climate change.⁴⁵ A 2015 World Resources Institute assessment of existing or proposed mandatory reporting greenhouse gas (GHG) reporting programs⁴⁶ identifies the 11 existing and 2 proposed initiatives:

- Australia's National Greenhouse and Energy Reporting Scheme
- California's Mandatory GHG Reporting Program
- Canada's GHG Emissions Reporting Program
- China's proposed national reporting program
- European Union's Emissions Trading System
- France's Bilan d'Emission de GES
- Japan's Mandatory GHG Accounting and Reporting System
- Mexico's National Emissions Registry
- Norway's Emissions Trading System
- South Africa's proposed GHG reporting program
- Turkey's GHG Reporting Scheme
- United Kingdom's GHG Reporting Program
- United States' GHG Reporting Program

These programs could link to the NAZCA portal as independent data providers, or through integrated or parallel reporting to an existing data provider. Japan, for instance, formed the first national supplement to the carbonn Climate Registry, with 124 cities and prefectures utilizing the Local Governments Climate Change Registry to report and publicize their actions and commitments.⁴⁷ This system could provide a model for other nations with similar mandates for sub-national climate action and reporting. France recently became the first nation to require institutional investors to disclose their response to climate-related risks (due to both “physical” threats and a “transitional” regulatory and economic landscape), and their contributions to global climate goals and the country's energy transition.⁴⁸ By June 2017, institutional investors in France must report their contributions to international efforts to cap global warming and support France's energy transition.⁴⁹ The government plans to review the implementation of the decree

⁴⁵ OECD & CDSB. (2015). Climate Change Disclosure in G20 Countries: Stocktaking of Corporate Reporting Schemes. Retrieved from: <http://www.oecd.org/daf/inv/mne/Report-on-Climate-change-disclosure-in-G20-countries.pdf>.

⁴⁶ Singh, N. & Bacher, K. (2015). Guide for Designing Mandatory Greenhouse Gas Reporting Programs. World Resources Institute. Retrieved from: <http://www.wri.org/publication/guide-designing-mandatory-greenhouse-gas-reporting-programs>.

⁴⁷ carbonn Climate Registry. Japan Registry. Retrieved from: <http://carbonn.org/partnerships/japan-registry/>.

⁴⁸ Rust, Susanna. (1 February 2016). France aims high with first-ever investor climate-reporting law. *Investments and Pensions Europe*. Retrieved from: <http://www.ipe.com/countries/france/france-aims-high-with-first-ever-investor-climate-reporting-law/10011722.fullarticle>.

⁴⁹ Smaller investors, namely entities with a total balance sheet or belonging to a group with a total balance sheet of less than €500m, must only report on how they integrate environmental, social and governance factors into their investment policies. (Rust, Susanna. (1 February 2016). France aims high with first-ever investor climate-reporting law. *Investments and Pensions Europe*. Retrieved from: <http://www.ipe.com/countries/france/france-aims-high-with-first-ever-investor-climate-reporting-law/10011722.fullarticle>.)

after two years of application, by the end of 2018.⁵⁰ Since this program is still emerging, it offers a unique opportunity to explore options for integrating this data with NAZCA and/or its data providers.

NAZCA could also benefit from collaborating or drawing from the strategies other data providers apply to analyze and contextualize climate action. For instance, the Climate Action Tracker (CAT) holds lessons for how to evaluate and communicate climate action. Based on whether a country's climate action is compliant with a 2-degree Celsius trajectory, CAT assesses four types of ratings, "Inadequate," "Medium," "Sufficient," and "Role Model." NAZCA could also adopt a similar approach to CAT's, analyzing whether a city or corporation's climate pledge is "2-degrees Celsius compliant." NAZCA could also take cue from the World Resources Institute's suite of Climate Analysis Indicator Tools (CAIT), including the Climate Data Equity Explorer and Paris Contributions Map. These tools help users understand different dimensions of climate pledges and intended nationally-determined contributions (INDCs) to the Paris Agreement. The Data Equity explorer sheds light on a country's historic, current and future emissions to aid a user's understanding of whether a country's climate actions are equitable taking into consideration a country's vulnerability, economic development, and adaptive capacity. Table 2 below summarizes other data providers that NAZCA could incorporate or emulate as the platform develops.

Data Provider	Reporting/Measured Entity	Description	Feasibility
Climate Action Tracker	National governments	An independent scientific analysis produced by four research organisations, has been tracking climate action and global efforts towards the globally agreed aim of holding warming below 2° Celsius since 2009. Climate Action Tracker monitors countries' progress towards their climate commitments, and evaluates the ambition of these commitments relative to a country's emissions contributions and the overall level of action needed to secure a 2° C trajectory. ⁵¹	Provide template and strategies for contextualizing and visualizing climate action data, to guide future development of the NAZCA platform. May be especially helpful in contextualizing ambition of climate action commitments.
CAIT Climate Data Explorer	National governments	CAIT includes a suite of tools that allow users to enable users to explore and visualize data regarding equity in climate negotiations,	Provide template and strategies for contextualizing and visualizing climate

⁵⁰ Rust, Susanna. (1 February 2016). France aims high with first-ever investor climate-reporting law. *Investments and Pensions Europe*. Retrieved from: <http://www.ipe.com/countries/france/france-aims-high-with-first-ever-investor-climate-reporting-law/10011722.fullarticle>.

⁵¹ Climate Action Tracker. Retrieved from: <http://climateactiontracker.org/> (accessed April 2016).

		transparency and available information in country climate action commitments, historical emissions data, and the methodologies behind future emissions projections. ⁵²	action data, to guide future development of the NAZCA platform. May be especially helpful in comparing transparency of climate actions and informing sector-level visualizations of climate action.
INDC Content Explorer	National governments	The INDC Content Explorer aggregates and compares the types of content (such as fossil fuel subsidy reform, mitigation and adaptation finance, and reference to assessment and review) included in the Intended Nationally Determined Contributions (INDCs) submitted by national governments to the UNFCCC. ⁵³	Provide template and strategies for contextualizing and visualizing climate action data, to guide future development of the NAZCA platform. May be especially helpful in informing ways to measure and contextualize adaptation commitments.
American Campuses Act on Climate Pledge	Civil Society Organizations	This pledge, spearheaded by the Obama Administration, includes 318 colleges and universities who announced plans to “accelerate the transition to low-carbon energy while enhancing sustainable and resilient practices across our campus.” ⁵⁴	The pledge could provide a new source of commitments if its reporting and verification framework were to be aligned with NAZCA’s guidelines for inclusion.
American Businesses Act on Climate Pledge	Companies	This pledge, spearheaded by the Obama Administration, includes 154 companies who announced plans to “reduce their emissions, increase low-carbon investments, deploy more clean energy, and take other actions to build more sustainable	The pledge could provide a new sources of commitments if its reporting and verification framework were to be aligned with NAZCA’s guidelines for

⁵² World Resources Institute. CAIT Climate Data Explorer. Retrieved from: <http://cait.wri.org/> (accessed April 2016).

⁵³ German Development Institute/ Deutsches Institut für Entwicklungspolitik (DIE). Beyond Mitigation: INDC Climate Explorer. Retrieved from: <http://klimalog.die-gdi.de/en#INDCContentExplorer> (accessed April 2016).

⁵⁴ The White House Office of the Press Secretary. (11 December 2015). American Campuses Act on Climate. Retrieved from: <https://www.whitehouse.gov/the-press-office/2015/12/11/american-campuses-act-climate>.

		businesses and tackle climate change.” ⁵⁵	inclusion. Some companies already report through NAZCA data providers; others could be encouraged to do so.
The United Nations-supported Principles for Responsible Investment (UNPRI)	Companies, investors	The PRI works with its international network of signatories to put the six Principles for Responsible Investment into practice. PRI’s ESG Engagement has 500 signatories involved, 600 engagements run and 1,700 companies targeted. The reporting team achieved 250 investors in public consultation, 360 in pilot report, 800+ reporting in first year. ⁵⁶	The UNPRI can complement the corporate data provided to NAZCA by the CDP.
Global Reporting Initiative (GRI)	Companies, investors	GRI is an international independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues such as climate change, human rights, corruption and many others. ⁵⁷	The GRI could inform the creation of standards and guidelines for corporate commitments on NAZCA.
Sustainability Accounting Standards Board (SASB)	Companies, investors	SASB is to develop and disseminate sustainability accounting standards that help public corporations disclose material, decision-useful information to investors. ⁵⁸	SASB’s industry-navigator tool can provide a background to understand the commitments taken by different industries.
Nationally-Mandated Reporting Programs	Investors, sub-national governments, companies	A number of national governments have established or are considering mandatory climate action and/or reporting programs for sub-national governments and/or the private	Mandatory reporting programs could provide a new source of information to NAZCA ,

⁵⁵ The White House Office of the Press Secretary. (30 November 2015). White House Announces Additional Commitments to the American Business Act on Climate Pledge. Retrieved from: <https://www.whitehouse.gov/the-press-office/2015/11/30/white-house-announces-additional-commitments-american-business-act>.

⁵⁶ Principles for Responsible Investment. (2015). Retrieved from: http://www.unpri.org/viewer/?file=wp-content/uploads/PRI_Brochure_2015.pdf.

⁵⁷ Global Reporting Initiative (GRI). About GRI. Retrieved from: <https://www.globalreporting.org/Information/about-gri/Pages/default.aspx>.

⁵⁸ Sustainability Accounting Standards Board (SASB). Vision and Mission. Retrieved from: <http://www.sasb.org/sasb/vision-mission/>.

		sectors.	either through the incorporation of a new data collection platform; for instance, through coordination with the French government as it implements its new law mandating climate action reporting from institutional investors, ⁵⁹ or through a partnership with an existing data provider (similar to Japan's partnership with the carbonn Climate Registry.) ⁶⁰
GRESB	Investors	An industry-driven organization committed to assessing the ESG performance of real assets globally, including real estate portfolios and infrastructure assets. ⁶¹	Could be a cooperative initiative by real estate investors or green building projects.
The China Regional Low Carbon Alliance	Sub-national governments	In 2014, The Climate Group and Gui'an New Area Government launched the China Regional Low Carbon Alliance, which brought 9 Chinese regional governments together to drive innovation and leadership around low carbon technologies, with a particular focus on: innovative financing, cleantech advancements and infrastructure investment.	While data collection and standardization could be a challenge, the Alliance could serve as a means for exploring the interest in its members participation in the NAZCA platform, either through an existing data provider, or through the creation of a new data platform.
The Association for Southeast Asian Nations	Sub-national governments	The ESC program promotes urban sustainability in Southeast Asia, by developing capacity and implementing pilot projects in urban	The pledge could provide a new sources of commitments, if its reporting and

⁵⁹ Rust, Susanna. (1 February 2016). France aims high with first-ever investor climate-reporting law. *Investments and Pensions Europe*. Retrieved from: <http://www.ipe.com/countries/france/france-aims-high-with-first-ever-investor-climate-reporting-law/10011722.fullarticle>.

⁶⁰ The Japan registry includes 124 Japanese cities and prefectures and is the first national supplement to the carbonn Climate Registry. The participants agreed to implement the Local Governments Climate Change Registry, a system to actively report and publicize their actions and commitments. (Carbonn Climate Registry. Japan Registry. Retrieved from: <http://carbonn.org/partnerships/japan-registry/>.)

⁶¹ GRESB. About GRESB. Retrieved from: <https://www.gresb.com/about>.

(ASEAN) Environmental Sustainable Cities (ESC) Model Cities Programme		areas, and assisting in the development of regional action plans and indicators. In its next phase of development, the ESC aims to evaluate cities environmental performance with common indicators. ⁶²	verification framework were to be aligned with NAZCA's guidelines for inclusion.
Climate Initiatives Platform (CIP)	National governments, sub-national governments, companies, investors, and civil society organizations	An online repository of currently-operating international climate initiatives, that: (1) contribute to the reduction of greenhouse gas emissions; (2) are international in scope or have the potential for significant impact at global scale; and (3) are either dialogues, formal multilateral processes or implementation initiatives.	The CIP could provide a new source of cooperative initiatives for the NAZCA platform (by acting as a data provider for either NAZCA or the LPAA). Data would need to be selectively screened for incorporation into NAZCA (the CIP does not currently filter initiatives according to NAZCA's or the LPAA's criteria for inclusion).

Table 2. Potential data providers from which NAZCA could draw additional data and insights.

C. Homogenization of commitments by themes

A general lack of consistency between climate commitments recorded in NAZCA hinders comparability and ultimately an overall understanding of impact. While three data providers - Climate Bonds Initiative (CBI), Covenant of Mayors (COM), Investors on Climate Change (IOCC) - have commitments expressed in homogeneous patterns, the other four data providers - CDP, the carbonn Climate Registry (cCR), The Climate Group (TCG), and UN Global Compact (UNGC) - include commitments that vary significantly. Data providers could work towards greater harmonization in high-level categories, such as base and target years, reporting boundaries, etc., to allow for greater consistency in reporting climate actions.

Climate actions from cities and regions, companies, investors, and civil society organizations (CSOs) vary in terms of their content (e.g., dollars invested versus emissions reduced), base years (e.g., some cities may adopt a 2010 base year while others may choose 2005), target years (e.g., some companies may choose a 2020 target year while others 2025), boundaries (e.g., some cities adopt community-wide reduction targets while others are only focused on municipal operations), and emission reduction activities (e.g., some are expressed in intensity

⁶² Association of Southeast Asian Nations (ASEAN). ASEAN ESC Model Cities. Retrieved from: <http://modelcities.hls-esc.org/>

terms, with exact units such as unit production or unit output, obscured). Harmonization of commitments could help to provide some level of consistency - at very least, between similar reporting entities.

This section details commitments by the NAZCA themes (e.g., emissions reduction, energy access and efficiency, renewable energy, resilience) assigned by the platform. It identifies key characteristics (e.g., emissions type, emissions boundary, time frame, target typed, etc.) to illustrate the stark differences in how climate actions can be articulated in NAZCA. The common characteristics between different action areas could also inform efforts to assess commitments made within these action areas. This analysis form the basis for recommendations for Section D: Aggregating Impact - a critical function currently non-existent in NAZCA largely due to the inconsistencies and differences in how climate actions are identified.

C-1. Emissions Reduction (ER)

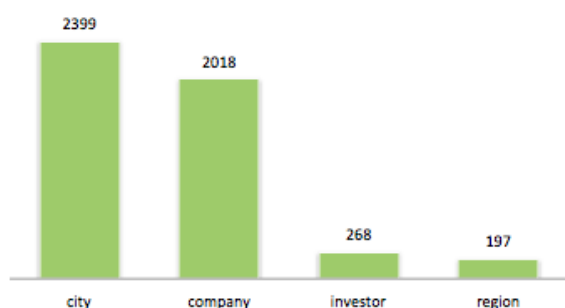


Figure 14. Entities making emissions reductions (ER) commitments on NAZCA.

Around 70 percent of all individual commitments are tagged as Emissions Reduction (ER) commitments (4,882 individual commitments and 4,830 individual and cooperative commitments on NAZCA), yet none were made by civil society organizations. Over half of these individual ER commitments were made by companies and investors. Figure 13 demonstrates the distribution of their ER commitments by sectors. With 305 total individual commitments, the capital goods sector records the most number of ER actions on NAZCA. The aggregate annual revenues of participating Forbes 2000 capital goods companies total \$1,649 billion.

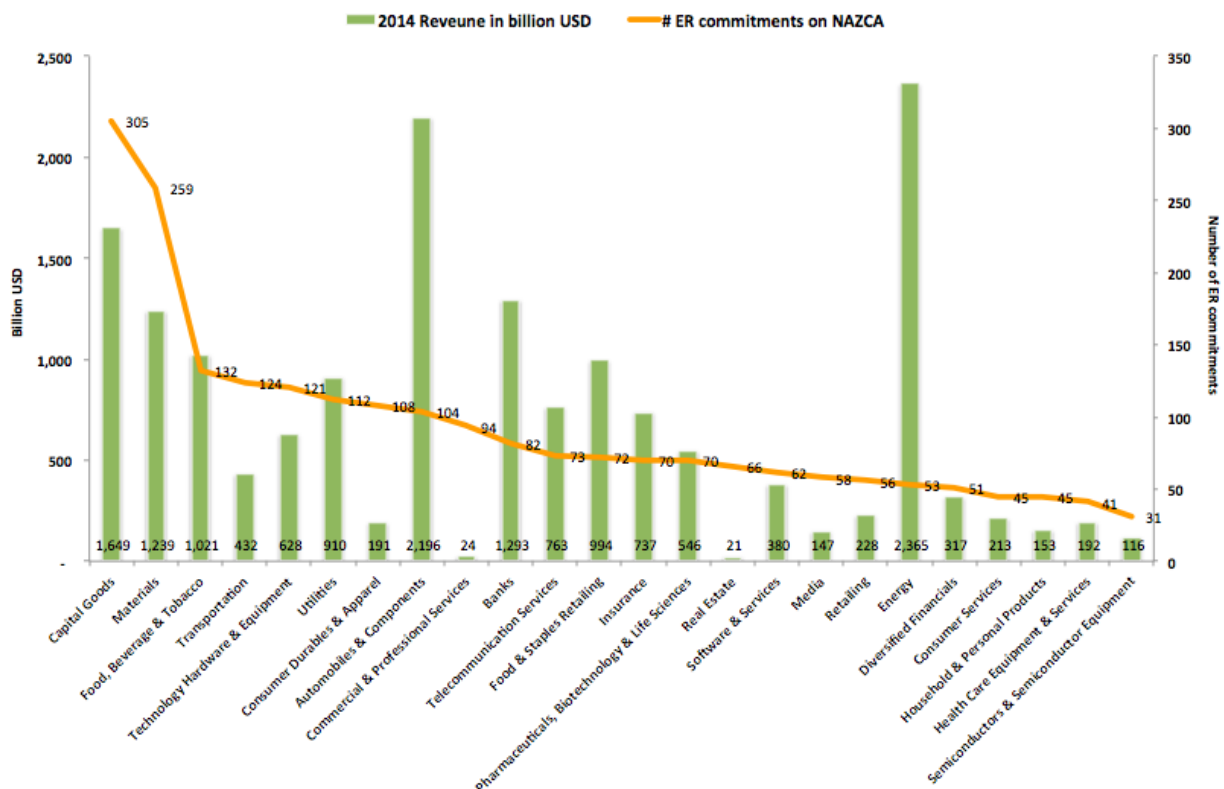


Figure 15. Company and investor Emission Reduction (ER) commitments by sector.

ER commitments explicitly list emissions mitigation targets and usually contain the following components:

- Emissions type: CO₂ emissions, CO₂e emissions, GHG emissions, or unspecified
- Emissions boundary: city-wide, region-wide, state-wide, community-wide, direct, operational, specific, across value chain, domestic, from government operations, from purchased goods, from purchased utilities, from transportation, from commuting, or unspecified
- Mitigation baseline: business-as-usual, trend scenarios, relative to a baseline year's emissions, or unspecified
- Time frame: start year, target year, or unspecified
- Target type: absolute emissions target, or relative emissions intensity target
- Quantifiability: mitigation target in percentage, mitigation target in tonnage, or unspecified
- Approach: a specific plan or method to achieve the commitment, or unspecified

ER commitments from CDP also include:

- Specific emissions boundary: Scope 1, 2, and/or 3 emissions and percentage of emissions in this scope
- Base year emissions in metric tons

The ER commitment from the British company GlaxoSmithKline is emblematic of many similar pledges on NAZCA. The company has pledged to “reduce CO₂e emissions across entire value

chain by 25% from 2010 to 2020 through increased energy efficiency, improved product design, and renewable energy installations and purchases.” In this commitment, the emissions type is specified in terms of absolute CO₂e emissions; the entire value chain forms the emissions boundary; the target year is 2020; the 25 percent mitigation target is quantifiable; and the company’s approach to delivering the commitment involves increasing energy efficiency, improving product design and installing and purchasing renewable energy. The timeline for implementing this action is less clear.

NAZCA tends to include more specific information within commitments from companies than in pledges from cities and regions. Less than one-third of these ER commitments included their mitigation approaches, and all these approaches are for companies and investors. Only one Canadian city mentions an energy plan in their commitment, despite the fact that one of the primary sub-national data providers, the Covenant of Mayors for Climate and Energy, requires signatories to create and publish a Sustainable Energy and Climate Action Plans. These plans detail cities and regions’ approaches to climate mitigation.

Among the ER approaches, 60 percent mention “increased energy efficiency” without further details; 18 percent aim to purchase low-carbon products and services such as hydro and solar power; 12 percent commit to improve transport efficiency by increasing fuel efficiency, increasing fleet efficiency, promoting efficient driving practices and so on; 8 percent pledge to install on-site renewable energy generation facilities; 2 percent plan to adopt low-carbon technologies including carbon dioxide and biogas capturing systems, carbon recovery plant, optimized bioethanol processes, gas reinjection, low-carbon building materials, life cycle assessment-based product design, district heating, integrated gasification combined cycle systems, optimized bottle packaging, and cogeneration from waste-to-energy installations.

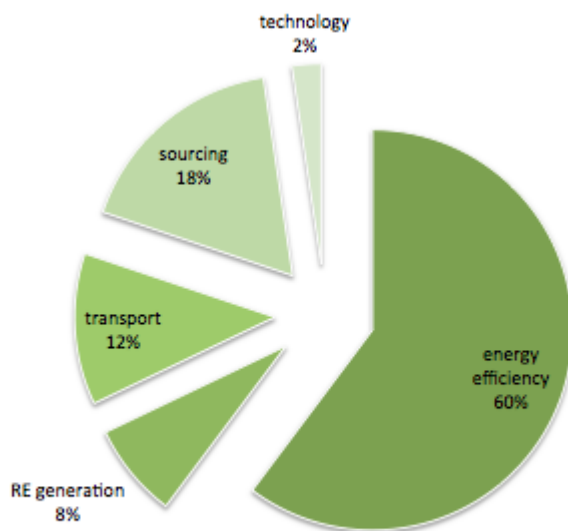


Figure 16. Energy efficiency measures comprise the majority of Emissions Reduction (ER) commitments.

Attempts to aggregate emissions reductions commitments will rest on the ability to identify and align the boundaries of different commitments. Cities and regions tend to set emissions targets based on geographical or administrative boundaries, such as city-wide, region-wide, state-wide and community-wide. Companies' targets usually follow their business operations or value chains, and can be roughly mapped to Scope 1, 2 and 3 emissions. Typically, Scope 1 refers to emissions produced directly by the company; Scope 2 emissions capture the greenhouse gases from purchased utilities; and Scope 3 emissions encompass the emissions from purchased goods and from commuting, though Scope 3 categorizations can be vague in terms of how far down the supply chain they go, as well as whether they include emissions from holdings or shares in other companies. Although CDP reports Scope 1, 2 and 3 emissions targets, NAZCA does not include this information.

C-2. Energy Access & Efficiency (EAE)

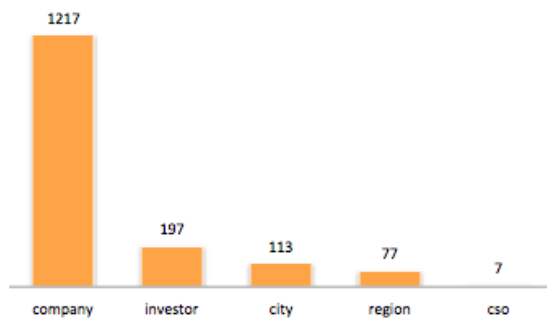


Figure 17. Entities recording energy access and efficiency (EAE) commitments on NAZCA.

Energy Access and Efficiency (EAE) is the NAZCA theme with the second largest number of individual commitments (1,611 individual commitments in scraped data and 1,695 individual commitments on NAZCA). However, over three-quarters of EAE commitments are cross tagged with ER on NAZCA, and the ones tagged solely as EAE might be mistagged. For instance, it is clear that the Brazilian state Rio de Janeiro's commitment to "reduce public-sector energy GHG emissions by 30% by 2030 based on 2005 levels through energy efficiency measures"⁶³ aims to reduce emissions by improving energy efficiency, despite being tagged only as an EAE commitment.

Most EAE-only commitments set similar targets to improve the efficiency of energy use or to reduce energy consumption, and contain the following components:

- State of energy: primary, final, or unspecified

⁶³ United Nations Framework Convention for Climate Change (UNFCCC). (2016). Non-State Actors Zone for Climate Action (NAZCA). Retrieved from: [http://climateaction.unfccc.int/subnational-region/rio-de-janeiro-\(state\)/brazil](http://climateaction.unfccc.int/subnational-region/rio-de-janeiro-(state)/brazil).

- Boundary: community-wide, region-wide, building-wide, energy use from government operations, energy use from business operations, energy use of the lighting system, or unspecified
- Quantifiability: percentage of reduced energy consumption, percentage of improved energy efficiency, percentage of energy savings, or unspecified
- Baseline: based on a certain year's emissions level, or unspecified
- Time frame: start year, target year, or unspecified
- Approach: a specific plan or method to achieve the commitment

Most cities and regions included a baseline year in their commitment, while companies often did not mention what baseline they choose in their targets. Similar to ER commitments, NAZCA did not mention how cities would improve their efficiency, while it did list a handful of companies' approaches, such as "substituting all existing lights with LED," and doubling "sales of energy efficiency products and services." Many cities and regions, like the abovementioned state of Rio de Janeiro,⁶⁴ do publish detailed plans to improve energy efficiency, through NAZCA's data providers.

Figure 18 lists company EAE commitments made by sectors. The capital goods and materials sectors have the greatest number of EAE commitments again, because most ER and EAE commitments are co-tagged. The transportation sector, however, has twice as many ER commitments as EAE commitments.

⁶⁴ The Climate Group (TCG). The State of Rio de Janeiro. Retrieved from: <http://www.theclimategroup.org/what-we-do/network/state-of-rio-de-janeiro>.

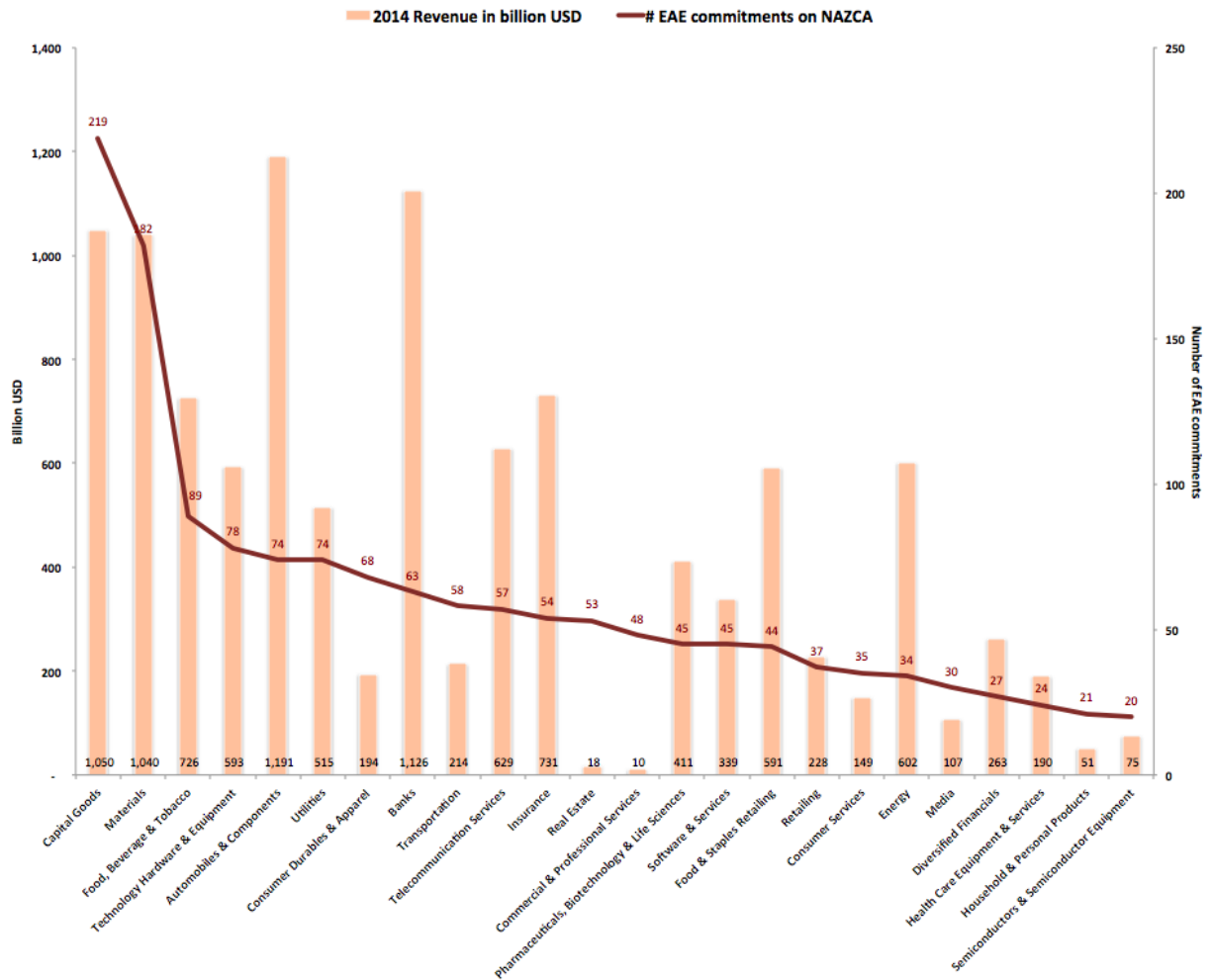


Figure 18. EAE commitments by sector.

C-3. Renewable Energy (RE)

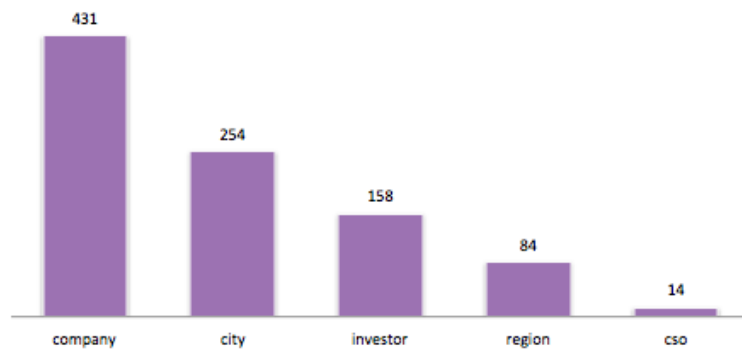


Figure 19. Entities taking renewable energy (RE) commitments on NAZCA.

Renewable Energy (RE) is the third most-commonly tagged theme on NAZCA, representing over 10 percent of individual commitments. RE technologies mentioned in these commitments include solar and photovoltaic energy, wind farms, hydropower stations, and bioenergy. However, the majority of commitments do not specify sources of renewable energy.

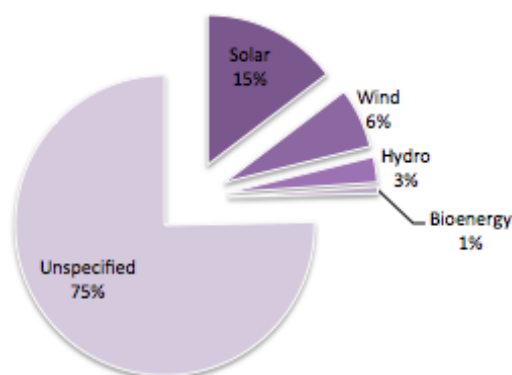


Figure 20. Renewable sources mentioned in RE commitments.

Most of the RE commitments are made by industry leaders that made the Forbes 2000 list in 2014. Figure 21 demonstrates the number of commitments from each sector and the total revenues of companies taking RE actions within that sector. Banks, and food, beverage & tobacco companies have made a similar number of RE commitments, while the aggregate revenue of participating banks are twice as much as that of food, beverage & tobacco companies. Over one-third of banks' RE commitments are green bonds with 7 billion of RE investment dollars, while only one such commitment is made by a beverage & tobacco company. This observation does not mean banks are more active than other sectors, but that context of commitments, such as the nature and scale of an action, is indispensable in understanding an action's impact.

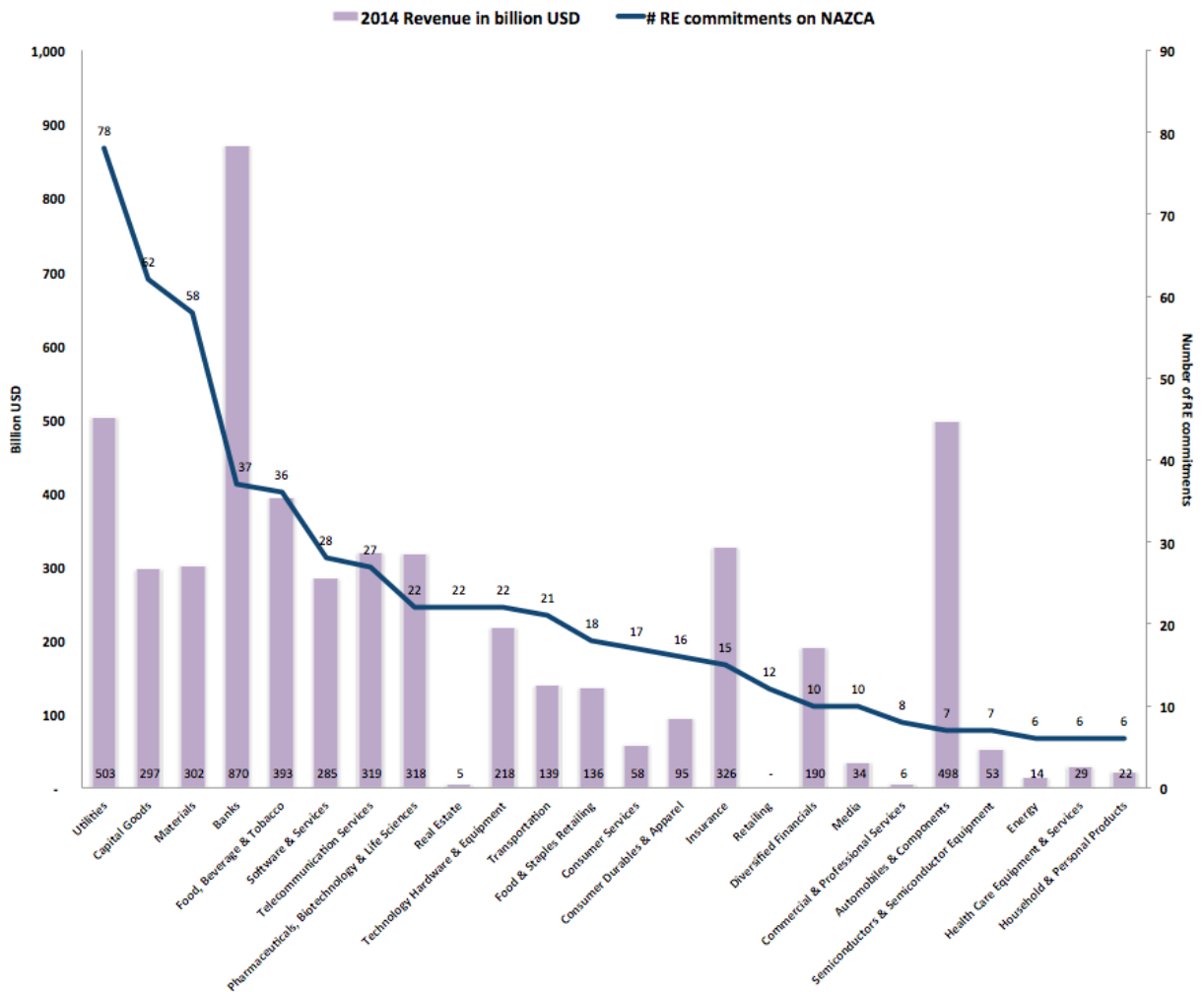


Figure 21. Company and investor RE commitments by sector.

About half of the RE commitments are cross-tagged with ER or EAE. In the remaining half of RE commitments, one-fourth (119 commitments) are co-tagged with a Private Finance label, representing a commitment to invest in or to issue green bonds for renewable energy projects by companies, investors and CSOs. Most RE-only commitments are made by cities and regions, and include the following components:

- Megawatts of renewables installed
- Percentage of increased share of renewables
- Percentage of renewables in energy portfolio or final energy mix
- Amount of RE investment

It is unclear why commitments to increasing the share of RE are not also tagged with an EAE label, since RE is an approach to energy access.⁶⁵

C-4. Private Finance (PF)

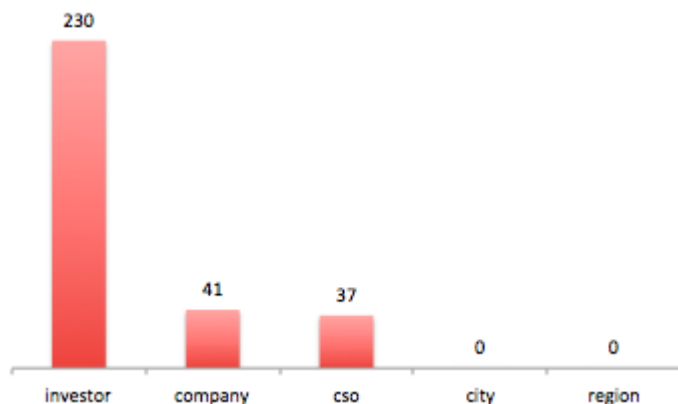


Figure 22. Entities committing private finance (PF) actions on NAZCA.

Private Finance (PF) commitments exclude investments made by cities or regions. Over half of the 308 NAZCA commitments bearing this label (119 individual commitments) are co-tagged with RE, which is consistent with the popularity of solar and wind projects in the energy market. The remaining PF commitments focus on green bonds, low-carbon funds, equity of environmental companies, green technologies and services, green buildings, and sustainable forest management. Given that green bonds are usually issued for green projects, it might also be worth specifying the purpose of a green bond to avoid overlaps with direct investment on green projects.

Common components of PF commitments include:

- Investment amount and currency
- Investment object
 - Projects
 - Equity
 - Other financial vehicles
- Location or market to be invested in
- Timeframe (only two commitments⁶⁶ mentioned their target year or starting year)

⁶⁵ The conversion factors of fossil fuels from primary energy to final energy typically range from 30-40 percent, while the conversion factors of renewable energy can be as high as 100 percent. (Energy Primer. Chapter 1. Retrieved from: <http://www.iiasa.ac.at/web/home/research/researchPrograms/TransitiontoNewTechnologies/energyprimer/energyprimer.html>.)

⁶⁶ These commitments pledge to: (1) "Arrange more than \$20 billion in new green financing by end of 2015" and (2) "Reduce credit exposure to the coal mining sector starting in 2015 to support carbon capture and storage technologies, help mining companies diversify their fuel sources, and promote the transition to a low-carbon economy." (United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/>.)

Timeframe (liquidity), risks and expected returns are three of the most important considerations for an investment decision. In the context of green finance, returns can be both financial and environmental. None of such information is included PF commitments, since NAZCA is more geared towards to a general public and investing professional can refer to sources such as Bloomberg for financial details.

C-5. Use of Carbon Price (UCP)

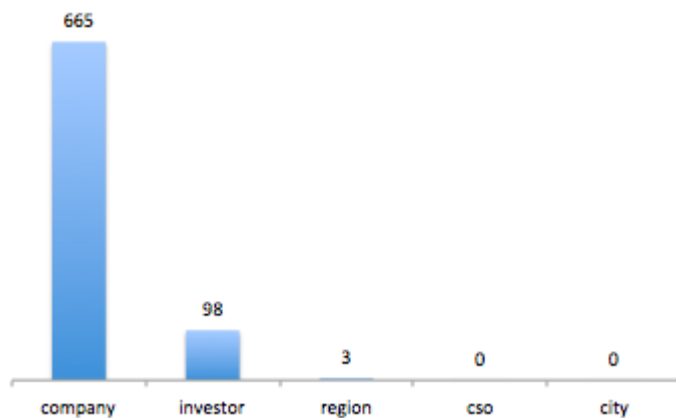


Figure 23. Entities using carbon pricing mechanisms, as recorded on NAZCA.

Less than one-sixth of these commitments include a specific carbon price, but those that do range from \$0.01 to \$357.37 USD. Figure 24 shows the average carbon price by sectors. The highest carbon price recorded on NAZCA was set by the Japanese spark plugs manufacturer NGK Spark Plug Co., Ltd. at 357.37 USD, while the leading African construction, concessions and manufacturing group Group Five set a price range and the lower end can be as low as 0.01 USD. Consumer services, households and personal products, insurance, pharmaceuticals, biotechnology & life sciences, and semiconductors & semiconductor equipment do not specify their carbon prices. Most commitments do not mention units of the carbon price or locations where the price applies -- a particularly problematic issue when the actions pertain to multinational corporations. On average, the Automobiles & Components sector set the highest carbon price at \$79.1, while the Technology Hardware & Equipment sector was at the other end of the range with an average price of \$7.9. The units are unclear, however, according to the data provider CDP's report *Putting a price on risk: Carbon pricing in the corporate world*, many companies do have detailed plans for setting up internal carbon prices.

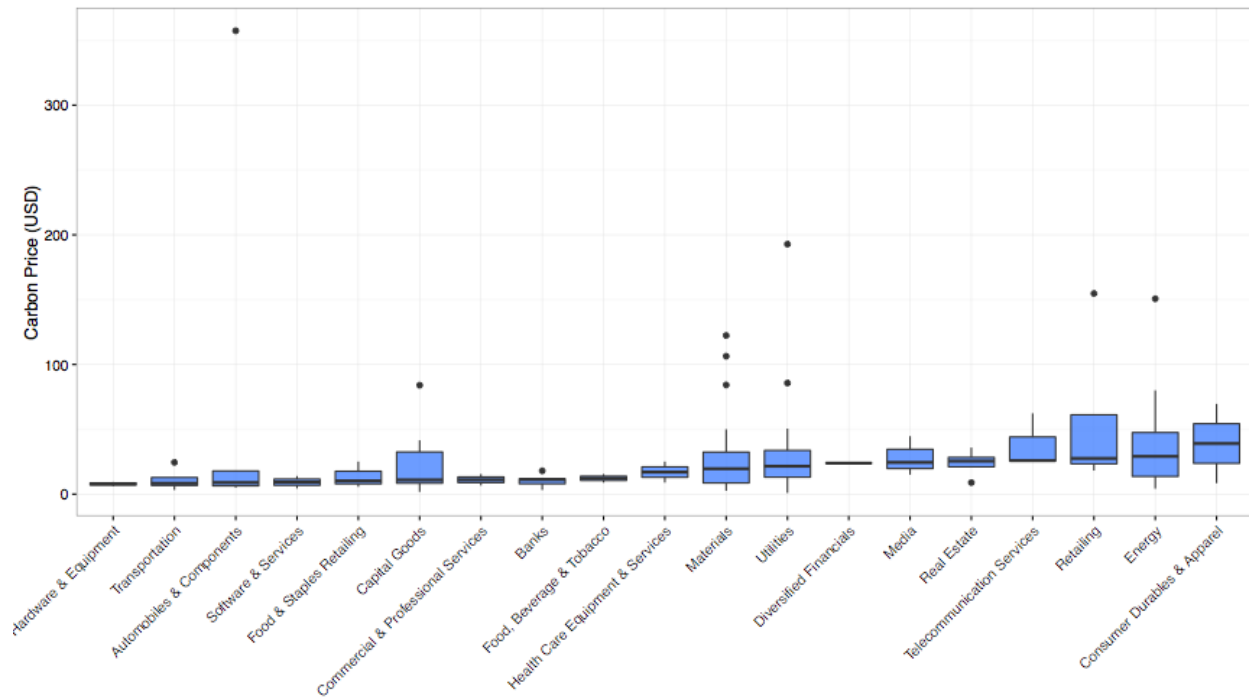


Figure 24. Average carbon price (in USD) set by companies and investors by sector.

Almost all of NAZCA's 766 Use of Carbon Price (UCP) commitments are made by companies and investors. Figure 25 shows the number of commitments from each sector and the total revenues of companies setting carbon prices within that sector. Most UCP commitments come from the materials sector, while the average carbon price is close to the lower range at \$27.2.

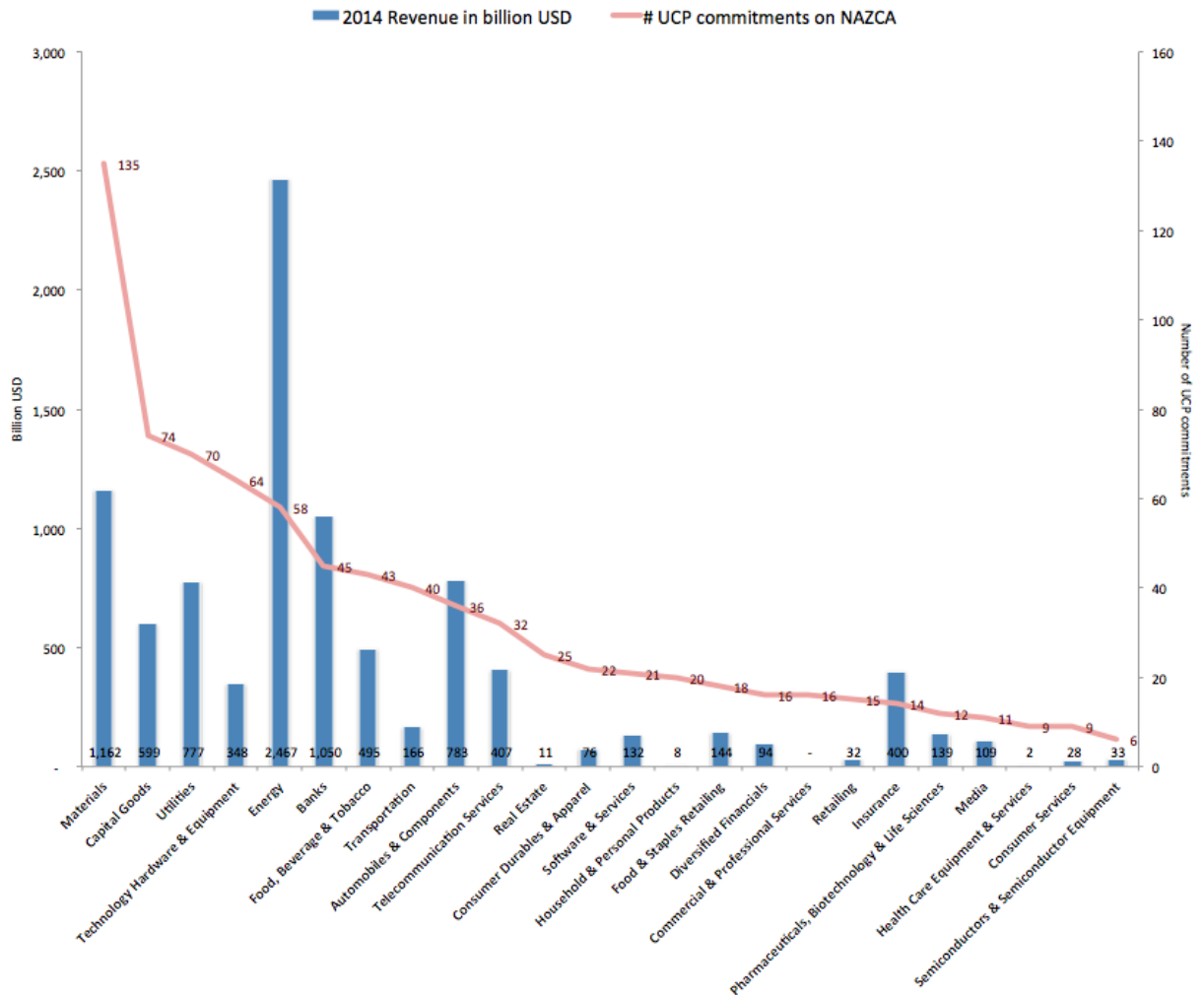


Figure 25. Company and investor UCP commitments by sector.

Relevant components in a UCP commitment include:

- Specified price of carbon including unit
- Timeframe (e.g. by which year a carbon price will be set)
- Location where the carbon price applies

C-6. Other



Figure 26. Climate actions tagged as 'other' on NAZCA.

Over half (25 commitments) of the 45 commitments tagged as “Other” on NAZCA represent cities, regions, companies, and investors’ pledges to issue green bonds for renewable energy, sustainable waste and other environmentally-focused projects. Among these green bond commitments, those made by companies and investors are also tagged as “Private Finance.” Green bond commitments typically include:

- Amount of bond issuance and currency
- Project type
- Location
- Timeframe

Most of the other commitments relate to waste management, such as reducing CO₂e emissions from waste generated in operations and achieving zero emissions from waste-to-landfill operations. How these commitments are expressed vary (e.g., volume of waste generated; percentage of landfill free status; percentage of emissions reduction; percentage of diverted waste, etc.) and therefore a set of standard components does not apply to them.

C-7. Forestry

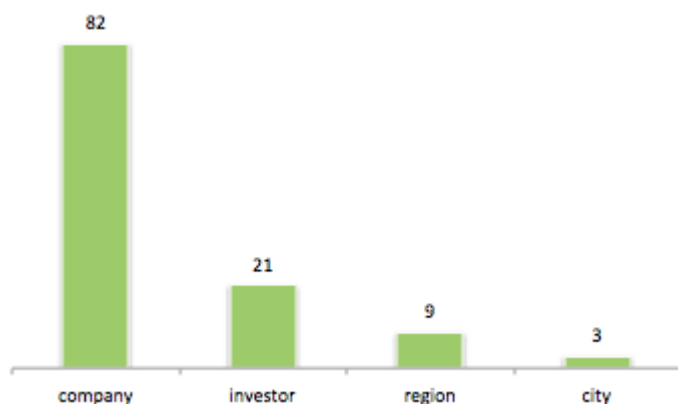


Figure 27. Entities recording forestry commitments on NAZCA.

Thirty percent of the 115 forestry commitments on NAZCA employ financial approaches, such as investment on sustainable forestry activities and management, and green bonds issued for projects in sustainable land use. Most of the remaining forestry commitments focus on decreasing deforestation and forest degradation, and include the following components:

- Percentage of decreased deforestation
- Scope (e.g., operations, supply chain, etc.)
- Timeframe (e.g., target year)
- Approach (e.g., through certified wood)

C-8. Transport

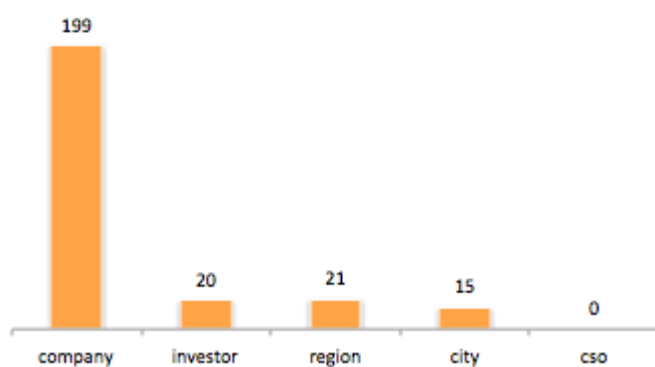


Figure 28. Entities taking transport-related climate actions on NAZCA.

Eighty-five percent of the 255 transport commitments on NAZCA also are labeled as ER commitments. Non-ER transport commitments vary greatly, including goals to issue green bonds for low carbon transport; reduce fossil fuel consumption; increase energy efficiency in the transport sector; and increase the number of low-emissions vehicles on roads.

C-9. Buildings

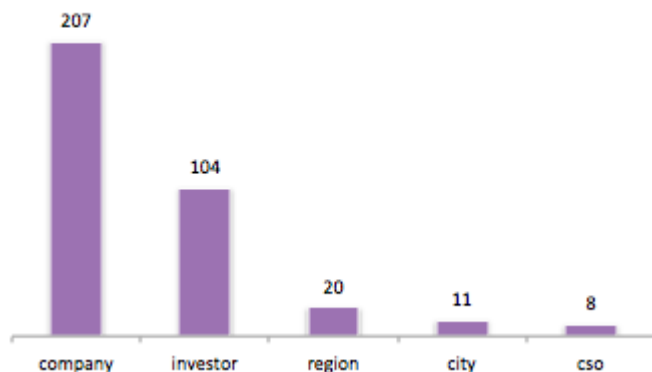


Figure 29. Entities recording climate actions in the buildings sector on NAZCA.

70 percent of 350 building commitments on NAZCA are also tagged as ER, while 15 percent are also tagged as PF. Building commitments without any additional labels focus on investing in green building; reducing the percentage of office energy consumption; and increasing energy efficiency in buildings. Many of the commitments that are currently classified only as building commitments could also be tagged as EAE.

C-10. Agriculture

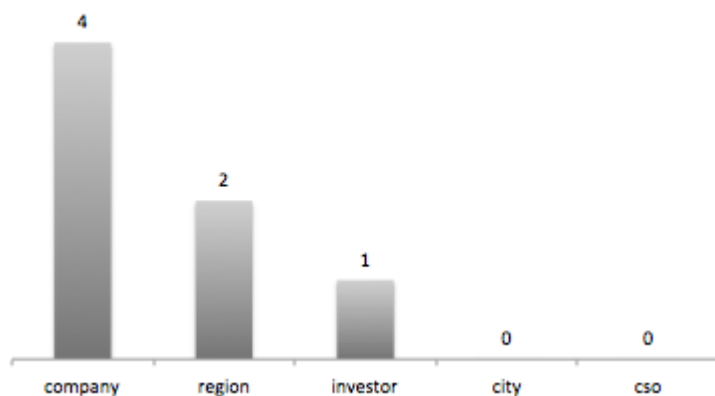


Figure 30. Entities recording agriculture commitments on NAZCA.

Every agriculture commitment is cross-tagged with other themes, such as forestry, ER, and PF. Topics covered in the 7 agriculture commitments on NAZCA include sustainable beef, sustainable land use, and sustainable agricultural practices.

C-11. Resilience

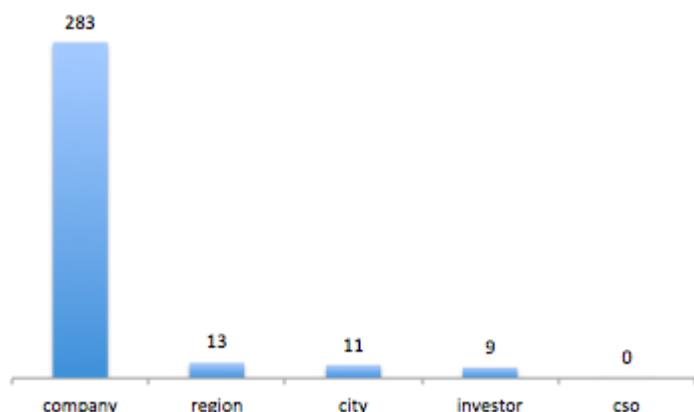


Figure 31. Entities taking resilience-related actions on NAZCA.

All of the 316 resilience commitments on NAZCA relate to water management. These commitments include compliance with water management standards or guidelines, as well as goals to decrease wastewater discharge, reduce water consumption or water use intensity, improve water use efficiency, safely replenish water, improve access to safe drinking water and issue green bonds for projects in sustainable water management. Commitments about reducing water consumption are structured similarly to ER commitments, with the following components:

- Percent reduction
- Absolute water consumption, intake and withdrawal or relative water intensity (per unit of production or USD revenue etc)
- Timeframe (starting year, target year and base year)
- Location (e.g. country, city, overseas or domestic sites)
- Scope (e.g. water from all sources, groundwater, water sourced from municipal supply etc.)

Labeling all of these commitments “resilience” is in some ways misleading, considering all relate to water. Moreover, water management is closely related to agriculture, yet this overlap is not reflected by the tagging system. For example, Syngenta AG commits to “increase the average productivity of the world's major crops by 20% without using more land, water, or inputs by 2020.”⁶⁷ This commitment is tagged as “resilience” alone.

⁶⁷ United Nations Framework Convention on Climate Change (UNFCCC). (2016). Non-State Actor Zone for Climate Action (NAZCA). Retrieved from: <http://climateaction.unfccc.int/company/syngenta-ag>.

C-12. Short-term pollutant (STP)



Figure 32. Entities taking climate actions on short-term pollutants on NAZCA.

All of the 33 NAZCA commitments tagged as addressing Short-term Pollutants (STP) are cross-tagged with themes such as ER, EAE and RE. These STP commitments focus primarily on reducing hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and methane.

C-13. Innovation

No individual commitment is tagged as focusing on Innovation - only cooperative commitments are labeled under 'Innovation.'

D. Aggregation for greater significance and level of confidence

NAZCA has taken an important first step to showcasing climate actions beyond national governments, and has the potential to help track and aggregate their impact. Understanding the uncertainties in the commitments and their underlying data is a necessary precursor to obtaining a level of confidence in any assessment that attempts to quantify overall impact.

One commonly-accepted approach to evaluating management plans, and target or goal setting, is the application of SMART criteria, or the extent to which commitments are (1) specific, (2) measurable, (3) achievable, (4) relevant, and (5) time-bound. NAZCA in its current form does not necessarily allow for the application of SMART criteria across actors, given the differences in the information collected by data providers. Additionally, while the tools that would underpin a full SMART analysis may be present in a data provider's framework, they are not always or consistently utilized. For instance, 90 percent of the reported community inventories submitted to the carbonn Climate Registry (cCr) are publically accessible, while 29 percent are verified by participating governments (though not always by a third party). The cCr's verified emissions inventories measure progress more reliably than unverified inventories, which, in turn, offer a more reliable measurement than commitments submitted without regularly updated inventories to track progress. In this instance, and in many others, commitments made on the same platform carry different levels of confidence. NAZCA's selection criteria attempts to weed out

less robust commitments from its data providers, to include just the most reliable ones. However, since the UNFCCC NAZCA coordinators selected these commitments manually, it is difficult to assess the success of this strategy.

An alternative strategy to more confidently aggregate climate actions is to rely on groupings by commitment theme (Section C). A set of preliminary criteria to estimate the level of confidence could be designed, based on the common components that occur within the 11 themes of climate action commitments on NAZCA. For instance, the SMART criteria could be adapted to assess ER commitments, based on whether or not the commitment contains:

- Specific: Information about the commitment's emissions type
- Measurable: Information about the commitment's mitigation baseline, quantifiable target, and base year emissions in metric tons
- Achievable: Information about a commitment's emissions boundary, target type, and approach
- Relevant: Information about how a commitment's goal compares to the overall emissions of the actor making it
- Time-bound: Information about the time frame of the commitment

This process would be complicated, however, by the fact that many data providers include information that NAZCA, in its goal to keep commitments concise, does not currently capture. For instance, many sub-national data providers include information about the approach to emissions reductions commitments that is not included on NAZCA. NAZCA could conduct an initial SMART assessment, based on the data currently available on its platform, and use the results to guide its decisions about whether or not to incorporate additional information from the data providers onto the platform.

Overall, NAZCA is only an entry-point into the wider world of non-state and sub-national climate action. The quality and confidence of commitments taken at face-value cannot be determined from NAZCA itself - one must dig deeper into the original data providers and reporting entities themselves to assess underlying confidence. Even then, confidence in the quality of data relies on the ability to verify underlying data from the entities themselves. This type of verification, often necessitating a third party, is costly and time-consuming, which is likely the reason many of the data providers do not require third-party verification. For instance, even though CBI is one of the data providers that best meets the criteria of a SMART analysis, the extent of verified information on its platform is limited. While the platform informally verifies each commitment, and, in theory, it would be possible to formally verify every bond issuer on the CBI site, questions about which third party verifier would perform this task, and who would pay for their efforts, remain unanswered.

Aggregating Climate Actions to Understand Broader Impact

The homogenization of climate commitments (Section C) would increase the utility of NAZCA, particularly by helping to allow for the summation or aggregation of actions to understand the

overall impact of climate actions. Aggregating the combined impact of climate actions from non-state and sub-national actors has become a high-priority policy issue, given evidence that national government pledges through the United Nations Framework Convention for Climate Change (UNFCCC) are inadequate to achieve necessary emission reductions to avoid dangerous climate change. The United Nations Environment Programme's (UNEP) Emissions Gap report finds an 8 to 10 gigaton gap between the carbon dioxide emissions cuts promised by current national pledges and the reductions required to maintain a 2020 least-cost trajectory for containing global temperature rise.⁶⁸ A UNFCCC analysis also shows that national climate action plans (or Intended Nationally Determined Contributions, INDCs) collectively fall short of reducing emissions to a level that would keep the world on a least-cost 2-degree C pathway after 2020. Even if governments fulfill all of their current climate pledges, emissions will rise 19 percent (8.7 Gt CO₂e) above the 2-degree C pathway by 2025, and would climb 35 percent (15.1 Gt CO₂e) above the emissions limit by 2030.⁶⁹

Non-state and sub-national climate actions could help fill this emissions gap, but questions about the exact nature and impact of their contributions persist. The range of overlap between sub-national, non-state, and national commitments ranges widely. For instance, a recent United Nations Environment Program's (UNEP) report estimates a 0.4 - 0.9 GtCO₂e overlap between international cooperative initiatives and national pledges by 2020,⁷⁰ while the PBL Netherlands Environmental Assessment Agency's methodology and selection of international cooperative initiatives leads it to a much higher estimate of overlap: 1.8 GtCO₂e by 2020 and 3.8 GtCO₂e by 2030.⁷¹ Efforts to quantify the emissions contributions or impact of non-state and sub-national climate action are just getting underway, and confront heterogeneous data in addition to data gaps.

A growing body of recent research has attempted to both characterize the information that is available in non-state and sub-national commitments, and to determine the mitigation impact of the most transparent and complete commitments. A study of the 29 cooperative commitments pledged at the 2014 UN Climate Summit found that only eight provided or included enough information to estimate their quantitative emissions impact. Accounting for overlaps with national commitments lowered the total number of pledges taking additional, quantifiable mitigation action to five commitments, with the potential to reduce emissions 2.5 Gts by 2020, an amount roughly equal to India's emissions in 2012.⁷² The United Nations Environment Programme (UNEP) assessed 15 of the most ambitious and specific commitments from the Climate

⁶⁸ The United Nations Environmental Programme (UNEP). (2014). The Emissions Gap Report 2014. Retrieved from: <http://www.unep.org/publications/ebooks/emissionsgapreport2014/>.

⁶⁹ United Nations Framework Convention on Climate Change (UNFCCC). (2015). Synthesis report on the aggregate effect of the intended nationally determined contributions. Retrieved from: <http://unfccc.int/resource/docs/2015/cop21/eng/07.pdf>.

⁷⁰ United Nations Environment Programme (UNEP). (2015). Climate commitments of subnational actors and businesses: A quantitative estimate of their emission reduction impact.

⁷¹ PBL Netherlands Environmental Assessment Agency. (2015). Climate Action Outside the UNFCCC. Retrieved from: http://www.pbl.nl/sites/default/files/cms/pbl-2015-climate-action-outside-the-unfccc_01188.pdf.

⁷² Hsu, A., Moffat, A. S., Weinfurter, A. J., & Schwartz, J. D. (2015). Towards a new climate diplomacy. *Nature Climate Change*, 5(6), 501-503.

Initiatives Platform, a database of international cooperative initiatives similar to NAZCA.⁷³ UNEP determined these pledges could cut 2020 emissions by 2.9 Gt, narrowing the emissions gap by nearly one-third.

A PBL Netherlands study, *Climate Action Outside of the UNFCCC*, estimated a 2.5 Gt CO₂e annual reduction in 2020 as a result of 14 international cooperative initiatives.⁷⁴ Ecofys and the Cambridge Institute for Sustainability Leadership also explored the Climate Initiatives Platform, quantifying the emissions reductions potential of five high-impact private sector initiatives.⁷⁵ At their current level of ambition, these initiatives could cut 2020 greenhouse gas emissions by 200 megatons (Mt). However, their impact could grow to 500 Mt, an amount equivalent to the yearly emissions of 131 coal-fired power plants, if they were to be scaled up rapidly.⁷⁶

As is evident in the different scopes of these studies, the research tracking these efforts also reflects different efforts to respond to varying levels of information. While harmonizing the data provided within and across different data providers and actor categories will be a long-term process, NAZCA could be in a position to help facilitate and support this process, through the information it includes in its commitments, and through the filters it uses to import data from data providers.

Encouraging or providing a forum for data providers to develop methodologies that ensure consistent measurement, clear reporting boundaries, and data transparency would support the implementation and clarify the impacts of sub-national climate actions. Specifically, encouraging commitments to detail comparable reference points, time frames, levels of emissions coverage, planning processes, methodological assumptions and approaches, and emissions sources and sinks would help compare them to each other, as well as to national commitments. Already, there are efforts underway to work towards methodological consistency and harmonization in reporting. The Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), convened by the World Resources Institute, establishes reporting guidelines for cities and sub-national governments.⁷⁷ The climate finance community is also in early phases to develop guidelines for aligning the tracking of climate investments.⁷⁸ Some data providers already use or encourage the use of these frameworks.

Ill-defined city and regional boundaries also create accounting challenges. Sub-national governments, for instance, often distinguish between ‘government’ (e.g., a municipality’s own

⁷³ United Nations Environment Programme (UNEP). (2015). Climate commitments of subnational actors and businesses: A quantitative estimate of their emission reduction impact

⁷⁴ PBL Netherlands Environmental Assessment Agency. (2015). Climate Action Outside the UNFCCC.

⁷⁵ The report focused on the Cement Sustainability Initiative, en.lighten, Tropical Forest Alliance 2020, Refrigerants, Naturally! and WWF Climate Savers Program, which respectively engage the cement, lighting, forest products, and refrigeration sectors, and help companies shrink their carbon footprints.

⁷⁶ Ecofys & University of Cambridge Institute for Sustainability Leadership. (2015). Better Partnerships: Understanding and increasing the impact of private sector cooperative initiative.

⁷⁷ WRI and WBCSD. (2014). Global protocol for community-scale greenhouse gas emissions inventories-version 2.0. Geneva, Switzerland and Washington, DC, USA.

⁷⁸ World Bank. (2015). Developing Common Principles for Tracking Climate Finance. Retrieved from: <http://www.worldbank.org/en/news/feature/2015/04/03/common-principles-for-tracking-climate-finance>.

building and transport emissions) and ‘community’-based (e.g., an entire community’s emissions sources over which a municipal government would exercise influence or control) boundaries. These distinctions are not always problematic, but without adequate context (e.g., information on population, sectoral contributions to overall emissions, etc.), comparing these efforts becomes nearly impossible.

Companies face similar challenges in clearly defining operational boundaries, particularly in the case of multinational corporations (MNCs) and joint ownership ventures, where a company’s inventory boundary is not clear whether a reporting entity includes emissions from subsidiaries and joint ventures. Further, whether a company choose to include supply chain or indirect emissions within its inventory is usually optional. For the purposes of reporting to a regulatory or voluntary emissions registry, the omission of Scope 3 (i.e., supply chain) emissions may be acceptable. In the long-run, however, addressing “carbon leakage,” where a product’s carbon footprint is spread throughout its supply chain, would help make carbon balance sheets truly comprehensive. Some areas, such as King County in Washington state, which includes the city of Seattle, have made efforts to conduct consumption-based GHG inventories, despite the lack of standardization and methodology to do so.⁷⁹

Relationship to the Paris Climate Agreement

Aggregating and understanding the total impact of non-state and sub-national climate actions will be particularly critical in the five-year review cycles to evaluate implementation progress of the Paris Agreement. During each review cycle, Parties to the UNFCCC will be expected to communicate a nationally-determined contribution that reflects progress beyond prior pledges and the highest possible ambition. Part IV of the Paris Decision (“Enhanced action prior to 2020”) “*Encourages* Parties to work closely with non-Party stakeholders to catalyse efforts to strengthen mitigation and adaptation action.”⁸⁰ Clear understanding of how much by way of emissions reductions non-state and sub-national actors within a country can contribute towards this “ratcheting up” of mitigation contribution is critical to help Parties estimate their highest ambition pledge.

To facilitate coordination between Parties and non-Party stakeholders, the Paris Decision further specifies the designation of two “high-level champions” that will work to ensure “successful execution of existing efforts” and the “scaling-up and introduction of new or strengthened voluntary efforts, initiatives and coalitions.”⁷⁹ Part of these champions’ role could be to encourage transparent progress reporting from initiatives and climate actions to allow for impact aggregation - a feature currently not available in NAZCA. The champions could incentivize participating entities to voluntarily report and contribute data to a centralized platform, ideally NAZCA. Data collection and reporting mechanisms must be designed in user-

⁷⁹ Lazarus, M., Chandler, C., & Erickson, P. (2013). A core framework and scenario for deep GHG reductions at the city scale. *Energy Policy*, 57, 563-574.

⁸⁰ UNFCCC. (2016). CP21/Draft Decision of the Paris Agreement. Retrieved from: <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>. Last accessed: April 22, 2016.

friendly formats so as to not discourage NAZCA members from submitting data and information on their implementation progress. The champions could work directly with NAZCA's core data providers to design easy-to-use formats and tools to ensure consistently-reported data that can then be easily analyzed by Parties or third-party analyzers.

E. Suggestions for improvement

The NAZCA platform faces a number of challenges and opportunities, stemming from the landscape of non-state and sub-national climate actions as well as the structure of the platform itself. This section provides recommendations and suggestions for how NAZCA can improve in subsequent phases.

- 1) *Modify labeling criteria to allow for greater clarity and harmonization of climate actions.*** It is difficult to get a clear understanding of many actions and commitments, due to the differing characteristics of climate action commitments among distinct climate actors and networks (as discussed in detail in Section D) and also to the organization of labels and actors on the NAZCA platform. In addition to harmonizing data across different platforms, NAZCA would paint a clearer picture by adjusting the way it labels commitments and clarifying its labeling criteria.

Transitioning to a labeling system with categories that are mutually exclusive and collectively exhaustive would provide a quick and clear view of the climate action landscape. NAZCA's existing 13 themes need to be defined beyond the broad categories adopted from the LPAA. Does the "Emissions Reduction" (ER) theme, for example, refer only to commitments that explicitly mention a mitigation target? Actions to improve energy efficiency or to install renewable energy sources, which lead to emissions reductions but are not labeled as ER commitments can confuse and frustrate attempts to aggregate mitigation impacts. Re-evaluating NAZCA's labelling system and establishing transparent, consistent labeling guidelines would enhance the analytic potential of the platform's climate actions. Improving transparency in the labeling process would facilitate efforts to report and track trends and themes in climate actions. Clearer labeling criteria could also benefit participating actors by making it easier to use the platform and follow the activities and strategies of their peers.

Posting NAZCA's selection criteria for inclusion (detailed in section B) on the platform website and posting notes announcing and describing data updates to the platform would further facilitate the accessibility of the site.

- 2) *Better integrate actions and actors to create a comprehensive picture of global climate efforts.*** There is currently no way to view climate investment for all five classified entities on NAZCA. Half of the commitments made by the "Investor" actor category, for instance, focus on reducing the carbon footprint of these actors' business operations and have nothing to do investment. Commitments tagged as "Private

Finance” exclude investment actions taken by cities, regions, and civil society organizations. As mentioned in section A, all actors - cities, companies, investors, and CSOs - issue green bonds, but there is no way to obtain a complete list of green bond commitments from NAZCA in its current structure.

NAZCA could also better contextualize commitments on the platform. The site could, for instance, track the number of public companies who have made commitments across different sectors, in terms of market share, revenue, and other indicators. An interactive dashboard that assesses NAZCA participation among companies in the Forbes 2000 provides an example of a form this analysis could take:

<http://visuals.datadriven.yale.edu/climateaction/>. These types of visualizations could further clarify the ambition of different sectors and of companies within sectors. Which sectors are leading on climate actions recorded in NAZCA? Which sectors are lagging? Contextual analysis connecting NAZCA data with other datasets could help answer these questions.

Assessing an actor’s commitment benchmarked against its own baseline or within a sector could help prevent greenwashing and reward the most ambitious commitments. This comparison could be performed if actors were required to submit baseline emissions to data providers and LPAA initiatives. The Covenant of Mayors, for example, stipulates that participating governments reduce their carbon dioxide emissions by at least 40 percent by 2030 and provides guidance to help governments consistently define the scope of their emissions.

3) Provide more information for cooperative initiatives to understand their impact, relationship to individual initiatives, and the Paris Agreement. As discussed in Section A-5, the reporting structure for individual varies significantly from that of cooperative commitments, with cooperative commitments providing much less detail than individual pledges. Creating pages on the NAZCA site that incorporate information about each cooperative initiative and synthesize information about their participants - such as participating actors’ population, baseline emissions, and average scale of commitment - would help clarify the impact of cooperative initiatives.

4) Address gaps in geographic and sectoral scope. NAZCA and its data providers miss climate actions from much of the world. Cities and sub-national regions are among the most active groups making climate commitments; yet NAZCA is missing many municipal actions, including last October’s announcement of the Alliance of Peking Pioneer Cities and China’s Low Carbon Pilot Cities, which represents 25 percent of China’s urban emissions.⁸¹ NAZCA should strive to incorporate these actions into the platform through partnerships with existing data providers and by integrating new kinds of providers into the platform.

⁸¹ Authors own calculations based on data from China’s National Bureau of Statistics.

Data from the Global South is sparse. Remedies for this problem could take the forms of connecting information-gathering groups, sharing knowledge that helps guide the creation of new platforms, and geographic expansion of existing frameworks. The gaps from emerging economies and developing countries usually indicate that many cities, states and regions, as well as small and medium-sized enterprises, do not have the capacity, resources, or wherewithal to record their efforts in existing reporting frameworks. Multinational meetings and summits would provide opportunities to hold important conversations and establish long-term partnerships among Global South actors. Developing countries will require access to financial and technical resources to improve data collection. Fostering financial match-making between NAZCA participants and funds, tailoring reporting strategies to developing countries, and supporting initiatives that maximize synergies among different reporting needs could help lower financial barriers to entry.

5) *Encourage horizontal alignment and integration among data providers.*

NAZCA's data gaps are also a product of the ballooning number of reporting platforms, which have proliferated to such an extent that climate actors have to pick and choose among them, scattering data across multiple sources and decentralizing climate action tracking and verification. NAZCA's blank spots are no trivial matter as they obscure some of the most polluting and carbon-intensive sectors, many of which are absent from the platform's records. As mentioned in Section A, only 17 of the 90 companies responsible for producing approximately two-thirds of global historic greenhouse gas emissions have climate commitments on NAZCA.⁸² NAZCA could fill these data gaps in heavy-polluting industries and broaden geographic representation by adopting a 'club' or 'all-in' approach and registering entire sectors all in one go. The LPAA could help build and foster these coalitions. This strategy has had notable success among large cement companies that have joined together to reduce their industry's collective carbon footprint through the Cement Sustainability Initiative.⁸¹

Among existing data providers, NAZCA could help foster the alignment of reporting requirements. There is already a movement to harmonize data reporting requirements between the Covenant of Mayors and the Compact of Mayors. Coordinating between these two cooperative initiatives will enhance comparability of city and regional climate actions across the board. It will also reduce reporting fatigue among participants, and make the field of climate commitments easier to understand and track.

6) *Shift NAZCA from registering commitments to tracking performance.* NAZCA needs to include performance data that determines which climate strategies are working and which are not. Some information is currently available through NAZCA's current data providers. The platform could encourage participating data providers to expand the collection of this information among data providers that do not currently collect it. Regular data on company and city emission levels, as well as cost savings and co-

⁸² Hsu, A., Cheng, Y., Weinfurter, A., Xu, K., and Yick, C. (20 April 2016.) Track Climate Pledges of Cities and Companies. *Nature*, 523, 303-305.

benefits (e.g., reduced health care costs due to lower levels of air pollution), will help determine climate initiatives' full impact as well as remaining data and implementation gaps. Developing and applying performance metrics in phases would encourage participation. This may mean gauging performance among subsets of actors to build momentum at the outset of this measurement phase and then ramping up requirements to ensure rigor and follow-through among pledging entities.

7) *Move beyond mitigation metrics.* Current data registries and platforms are too singularly focused on mitigation, meaning that other key functions, like capacity building, are often overlooked. There is a resulting dearth of information about actions' impacts on climate change adaptation, resilience, and additional co-benefits. Focusing solely on emissions also means that conditions that allow policy successes are not tracked. Non-state and sub-national actions can, for example, leverage public support for implementation of government policies, engaging individuals to help meet national targets. These sorts of climate actions can establish transnational norms that support low-carbon transitions. Emissions-focused actions may not capture these contributions.

Lending credence to this recommendation, Hsu et al.'s (2015) analysis of the UN Climate summit commitments found that only eight of the 29 pledges were related to emissions reductions and only five of those were quantifiable. This means that the remaining 21 commitments focused on climate strategies without a strict focus on mitigation. Research by Chan et al. (2015) found that these 21 actions relate to planning, institutional capacity building, and other support for public policy – all important functions to bolster future emission reductions.⁸³

8) *Incorporate open data principles.* A major challenge in analyzing NAZCA's commitments is accessing the data itself. Data are not available for download, nor are they third-party accessible through an application program interface (API). Building an API into NAZCA's data structure would afford analysts easy access to the platform's content, allowing researchers to review commitments and act as third-party watchdogs to help track implementation of climate actions. Not only would an API lend greater transparency to climate actions, it would also allow interfacing between NAZCA data and other datasets that can provide context for the platforms growing list of commitments. World Bank datasets on population, GDP, and carbon emissions, for example, could be linked together with NAZCA data to create visualizations and new metrics that help actors, policymakers, and the public understand the impacts of climate actions.

9) *Increase coordination between NAZCA and the LPAA.* The LPAA could leverage cooperative initiatives to facilitate horizontal integration, address geographic and sectoral

⁸³ Chan, S., R. Falkner, H. van Asselt, and M. Goldberg. (2015). Strengthening non-state climate action: a progress assessment of commitments launched at the 2014 UN Climate Summit. Centre for Climate Change Economics and Policy (Working Paper 242) / Grantham Research Institute on Climate Change and the Environment (Working Paper 216).

data gaps, and test and implement methods of contextualizing engagement and participation in climate action. The LPAA could also lead the development of strategies for identifying and scaling up non-state and sub-national climate action in support of national efforts to meet climate goals. The LPAA could organize multinational events, similar to the New York Climate Summit convened in September 2014, that would build momentum for increased climate action and provide a forum for stock-taking existing efforts. The LPAA is also well-positioned to catalyze the creation of sector-wide clubs to address climate action, as outlined in Suggestion 4, and to convene key stakeholders to develop approaches to vertically and horizontally integrating data. The LPAA could also play a key role in gathering qualitative information about the common characteristics of successful initiatives.

Greater coordination between NAZCA and the LPAA could focus on integrating non-state and sub-national climate action into national efforts to “ratchet up” national initiative ambition every five years. Whether through formal mechanisms, such as the Technical Examination Meetings, or through using NAZCA as a tool for countries to analyze climate actions, the set of commitments captured by this platform could be an invaluable resource in achieving the Paris Agreement’s goals.

Appendix I: Overview of NAZCA’s Data Providers

CDP⁸⁴

Overview of Data Provider

CDP currently provides data for 58 percent of all individual commitments. CDP works with 3,000 of the largest corporations in the world to help them ensure that an effective carbon emissions/reductions strategy is made integral to their business. The collection of self-reported data from thousands of companies is supported by 822 institutional investors with US\$95 trillion under management.⁸⁵

⁸⁴ Information sources include comments from Mr. Andrew Clapper (Project Officer, Insights, CDP North America) and CDP’s website at: <https://www.cdp.net>.

⁸⁵ CDP. Catalyzing business and government action. Retrieved from: <https://www.cdp.net/en-US/Pages/About-Us.aspx>.