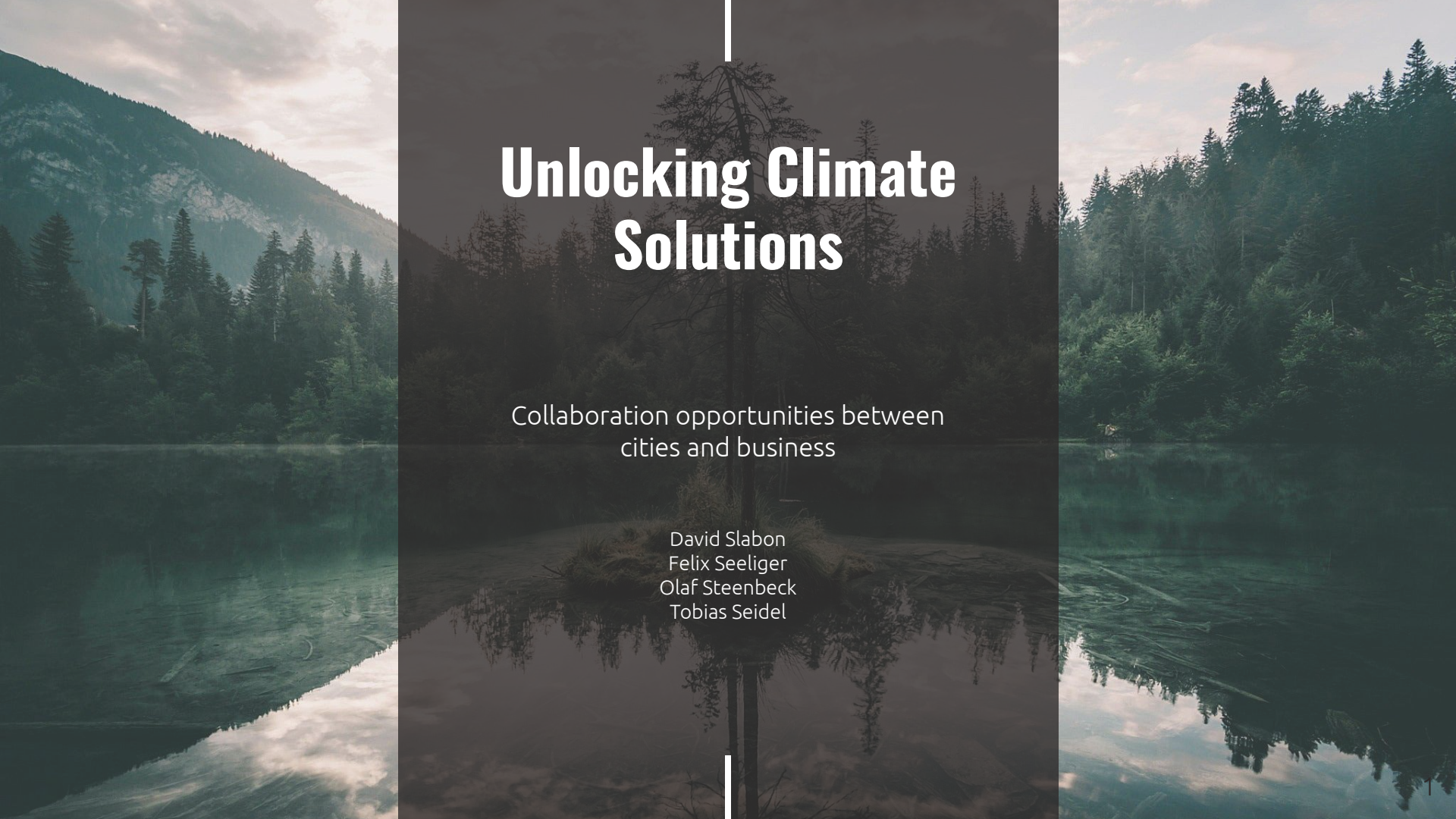


Unlocking Climate Solutions

Collaboration opportunities between cities and business

David Slabon
Felix Seeliger
Olaf Steenbeck
Tobias Seidel

ABOUT US

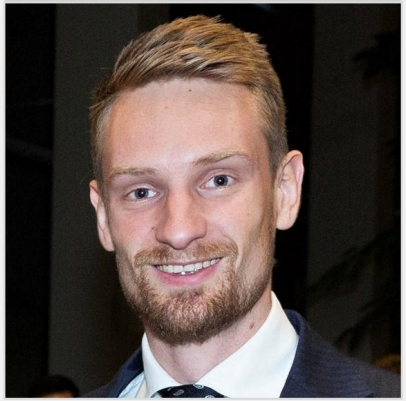
We are a diverse team with backgrounds in logistics, e-commerce, consulting & aviation

David Slabon

Felix Seeliger

Olaf Steenbeck

Tobias Seidel



Project Background

- Open source data science competition on **Kaggle** from CDP, a global **non-profit organization**
- CDP persuades companies throughout the world to **measure**, **manage**, **disclose** and ultimately **reduce** their greenhouse gas emissions
- Each year, CDP collects information from companies and cities worldwide about their climate strategy through a voluntary survey
- CDP assigns rates to cities and companies based on their reporting transparency that have become an industry standard

> “City-business partnerships have huge potential to reduce emissions on a greater scale than the city or business could manage alone.”
>
> — City Business Collaboration Alliance

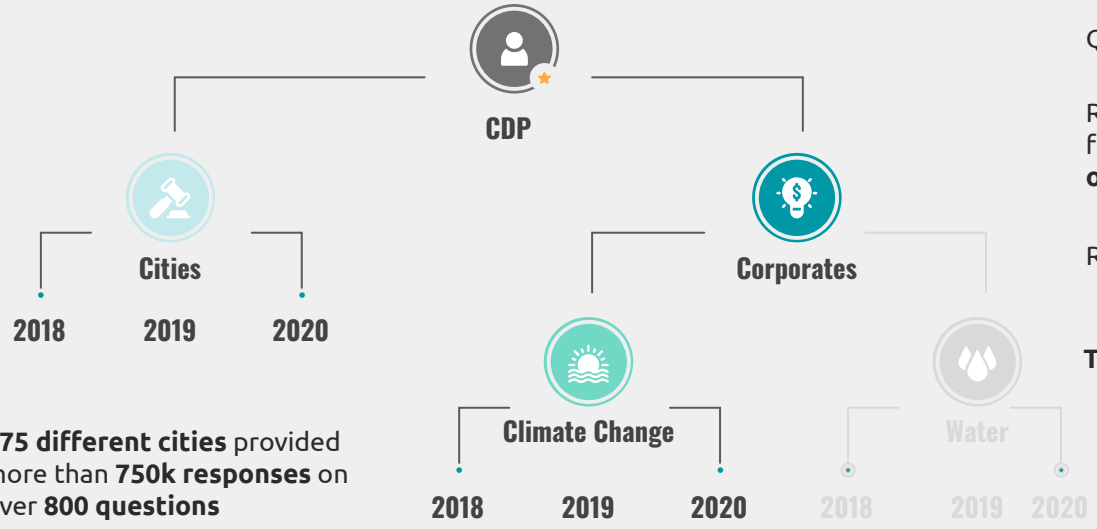
Project Objectives

I. Develop a methodology to measure the environmental actions of both cities and corporates with respect to social equity

II. Find areas where cities and corporates can collaboratively work on climate issues that do not perpetuate social inequity

We used survey data from cities and corporates collected between 2018 and 2020

Data file structure for questionnaires and responses



975 different cities provided more than **750k responses** on over **800 questions**

1292 unique corporates provided more than **1.1m responses** on over **800 questions**

A few of the obstacles

Questions differ from year to year

Response options were given in different formats including categorical, numerical and **open text**

Responses given in over **90 languages**

Topics included:

- Risks and opportunities
- Climate Strategy
- Emission targets and performance
- Energy consumption
- Emissions breakdown

1,912,208

Valid answers in the data set

8,010

Average number of responses per respondent

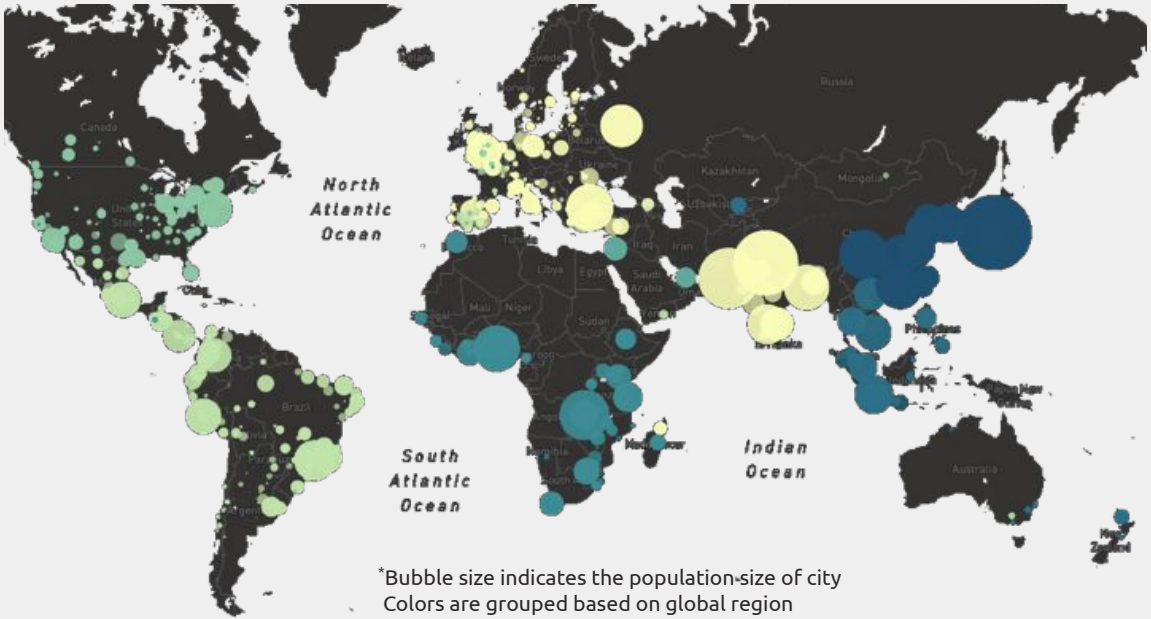
> 1000

Pages of questionnaires

We analyzed each question one by one

975 different cities of all sizes located in 94 countries have participated in the CDP survey

Global distribution of participating cities*

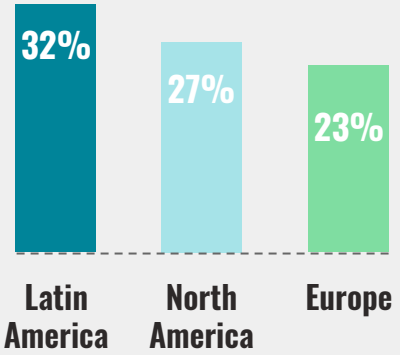


*Bubble size indicates the population size of city
Colors are grouped based on global region

Population range:

400 — 37m

Regional distribution:



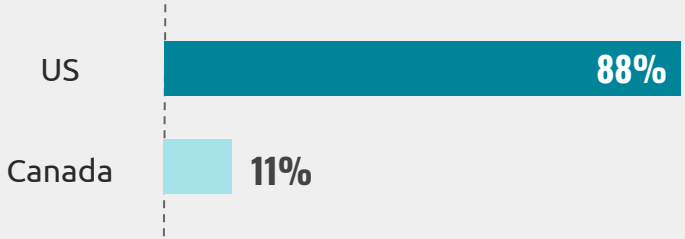
1292 North American companies from 11 industries and 240 sectors participated in the surveys between 2018 and 2020

General Information

1292 different companies participated in the water and climate change surveys coming from over **240 sectors.**

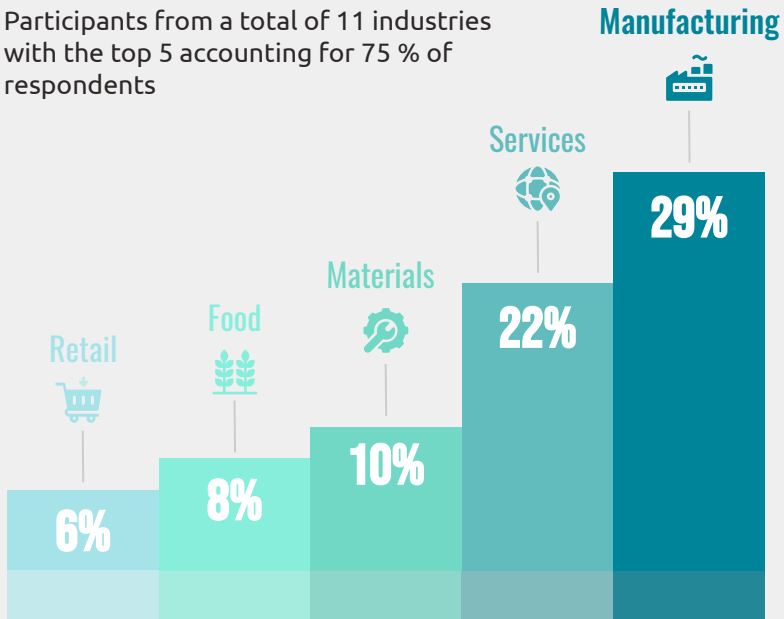
Corporate disclosure rate has grown by **48%** from 2018 to 2020

Regional distribution:



Primary industry distribution

Participants from a total of 11 industries with the top 5 accounting for 75 % of respondents



We developed the SCOREE methodology to measure the environmental and social footprint of cities & businesses

Social Equity

What are the social hazards of climate change and environmental action?

Opportunities

Which opportunities do cities and businesses arising from climate change?

Engagement

What level of engagement do cities and business show?

Collaboration

In what ways are cities and businesses collaborating to mitigate climate risks?

Risks

How at risk are cities and business and what threats arise?

Emissions

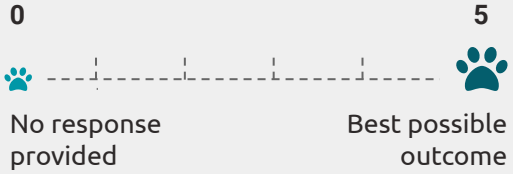
What are the current and projected GHG emission levels?

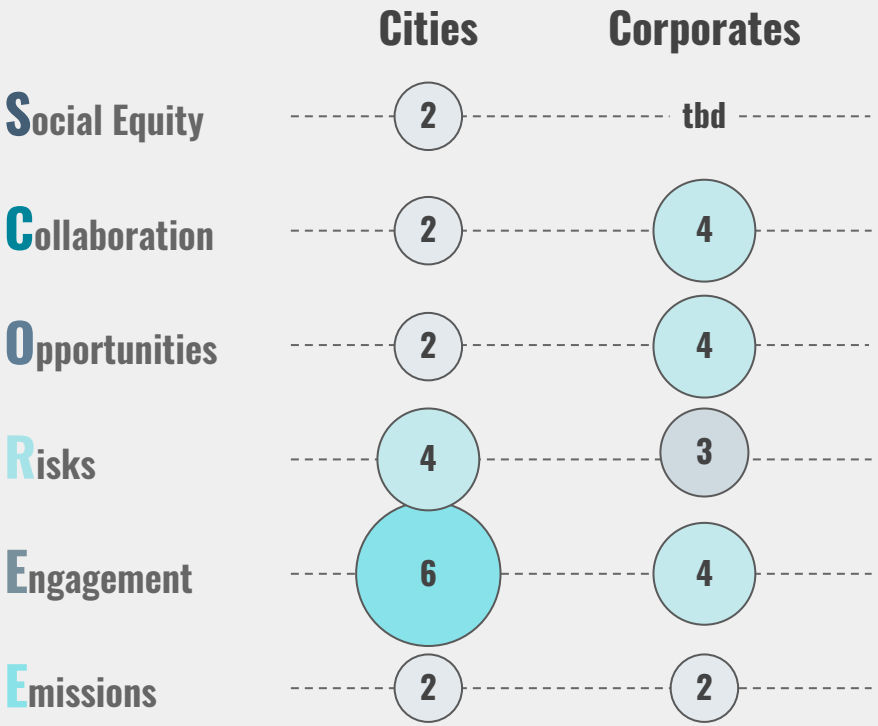
Using 36 criteria, our model captures the intersection of environmental & social action between cities & corporates

Scoring Methodology

We assigned a total of **36 scores** across **6 categories** for cities and corporates

For each score we used a similar scoring range from 0 to 5 in which we accounted for transparency and therefore rewarding higher scores for more disclosure:





Let’s explore the data together

We will conduct a live demonstration of our dashboard to get you a feeling for the CDP data and our scoring model

City-business collaboration appears to be most promising for the development of clean technologies

01

Currently, **social equity** appears to play little to **no role** in corporates climate change planning

03

Thematically, city-business collaboration appears to be most promising for the development of **new technologies**

02

At present, **city-business collaboration** seems to be most underdeveloped in the **Asian regions** as well as in **Latin America**

04

Collaboration along the corporate value chain and with cities is particularly missing in **high emitting industries** such as fossil fuels

Backup

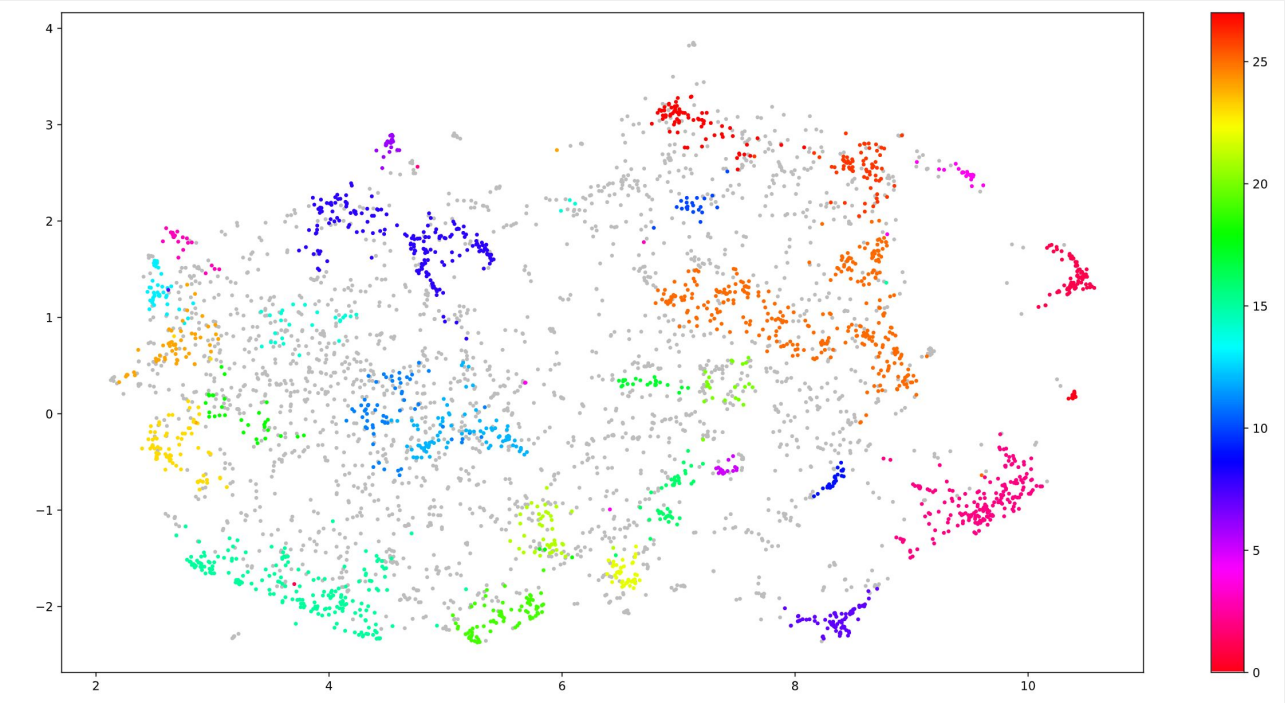
WHAT IS NEXT?

22,717,655

Words to be analyzed with natural language processing

Unlocking Climate Solutions

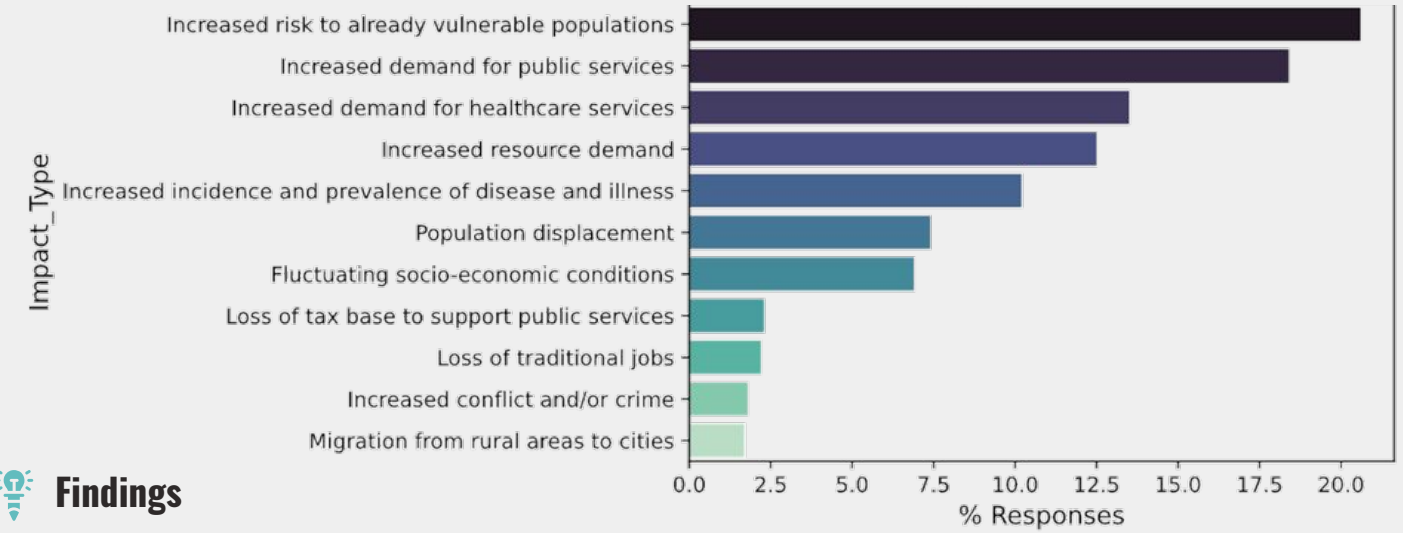
We will apply topic clustering to identify groups from open text responses



Additional Insights

Analyzing cities' responses shows that already vulnerable populations are particularly at risk from climate change

What are the social impacts from climate change?

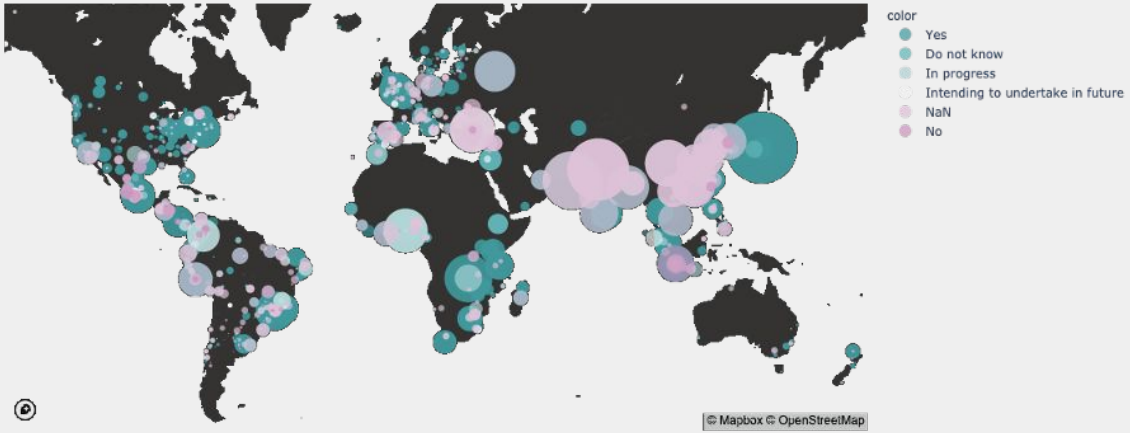


Findings

With the highest frequency, cities see alarming signs that their already vulnerable citizens are increasingly at risk from climate change.

City-business collaboration is already prevalent in North America & Europe with larger cities leading the way

Global city collaboration with businesses



Findings

City-business collaboration is particularly prevalent in North America & Europe while being significantly less common in Asia. Moreover, the larger a city the more likely it is to engage in business partnerships

*Bubble size indicates the population size of city

Collaboration score:

Score based on the existence of a city-business partnerships, where:

0 — NaN

5 — Yes

Collaboration area score

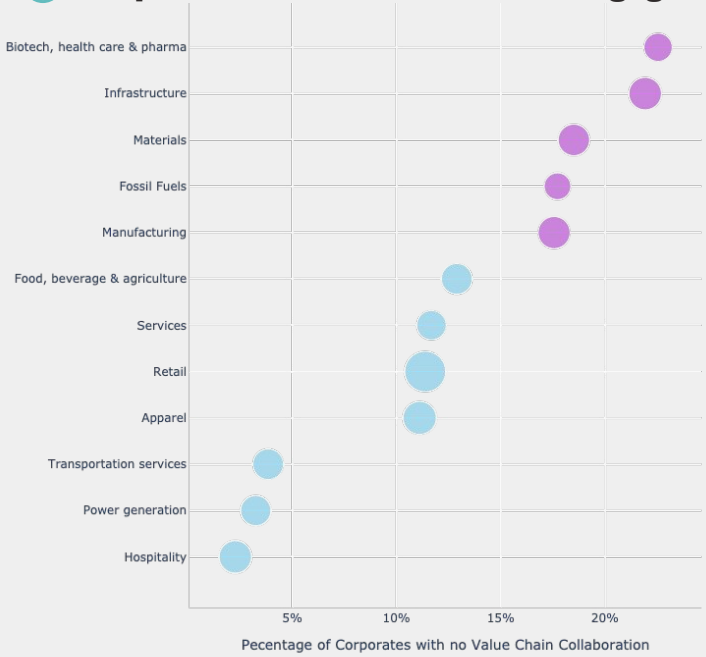
Score based on scope of city-business partnerships, where:

0 — NaN

5 — > 5 areas

Corporates from GHG intensive industries collaborate less frequently with their value chain on climate issues

Corporates without Value Chain Engagement per Industry in %



Findings

GHG intensive industries such as **Fossil Fuels**, **Infrastructure**, **Manufacturing** and **Materials** collaborate significantly less frequent with their value chain on climate issues compared to less emitting sectors such as **Hospitality**

Retail industry is most engaged with both suppliers and customers on climate topics

Value Chain Engagement

Score based on level of value chain collaboration, where:

0 — **5**

NaN — Full Value Chain

Supply Chain

Score based level of engagement with supply chain, where:

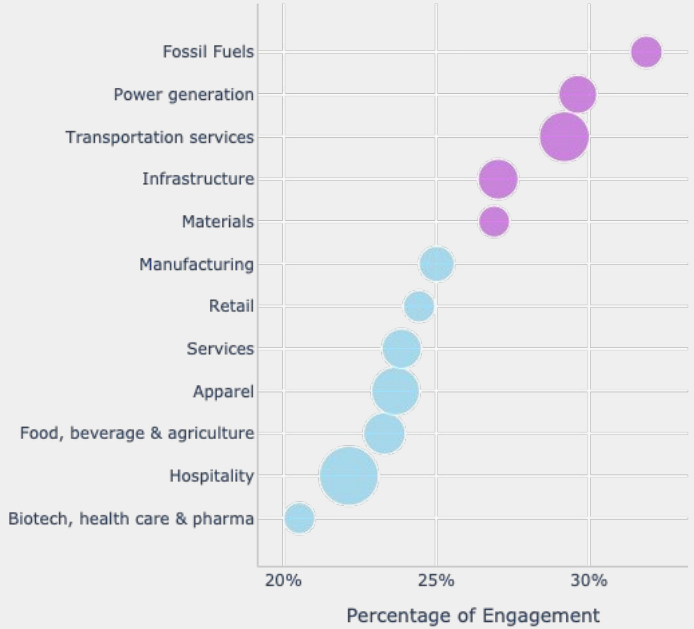
0 — **5**

NaN — Co-creation with suppliers

*Bubble size represents the percentage of companies in that industry collaborating with both suppliers and customers

Similarly, these corporates tend to engage more frequently with policy makers with a non-supportive position

Corporate Engagement with Policy Makers per Industry in %



Findings

Interestingly, the **Fossil Fuels** industry has the highest percentage (32%) of direct engagement with policy makers in regards to climate topics while have among the lowest support rate

Support refers to the alignment with policy makers in relation to climate topics. Here, the **hospitality** sector score particularly well

Customer Engagement

Score based on engagement level with customers, where:

0 — **5**

NaN — Co-creation with customers

Policy Engagement

Score based on supportive engagement with policy makers

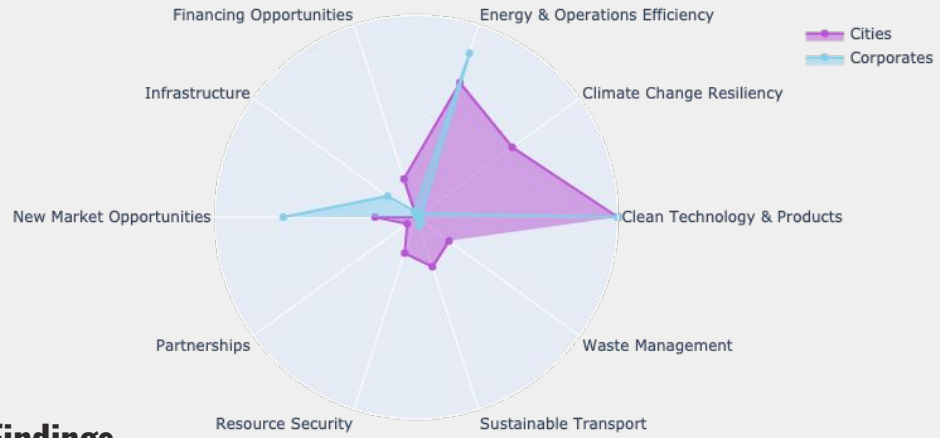
0 — **5**

NaN — Direct positive support

*Bubble size represents the degree with which industries support the policy makers. Larger bubbles indicate higher level of support

Both Cities and Companies see climate-related opportunities in the development of new technologies and energy efficiency

Climate Change Opportunity Perspective of Cities & Corporates



Findings

Both cities and companies see most climate-related opportunities in the development of new technologies and higher energy efficiency. Corporates place more emphasis on capturing new markets while higher resiliency is more important for cities

Opportunity Scores Cities

Scores based on identification of opportunities and identified pathway to maximize them, where:

NaN — > 5 opportunities identified

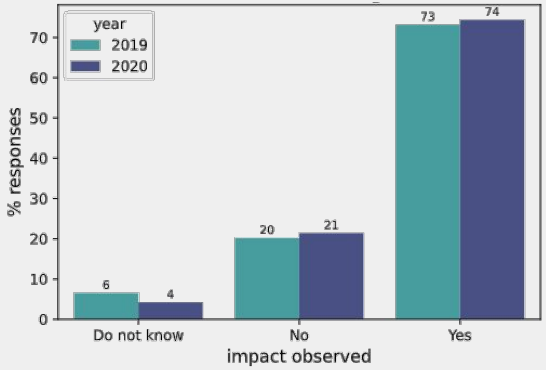
Opportunity Scores Firms

Scores based on number of identified opportunities with:

NaN — > 5 opportunities identified

Risks Cities

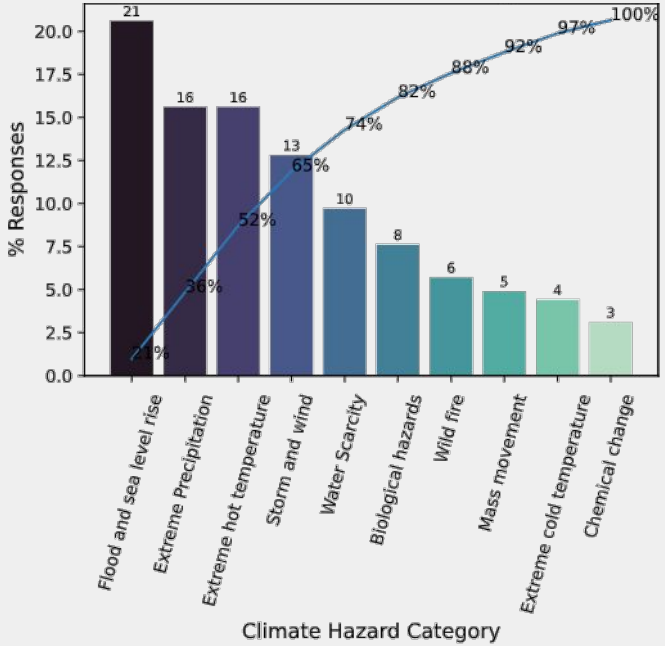
Cities impacted by Climate Hazards



Findings

Most cities are already directly affected by the threats of climate change. It can be assumed that socially disadvantaged groups are more frequently affected by extreme hot temperatures and water scarcity

What climate hazards are threatening cities?



Glance on some numbers

3,965,288	answers in the datasets
1,912,208	evaluable answers
8,010	possible answers *
753	different questions *
186	different question headings *
149	Number of pages *
36	evaluated core questions (scores)
9	Questionnaires
3	years considered (2018, 2019, 2020)

1,292	participating corporates
975	participating cities
94	represented countries
8	CDP Regions
2	interviewed target groups

1 Dashboard

* average per questionnaire

Challenges

- Questions differ from year to year
- Content of the question cannot be systematically determined
- Reply sequence partly individually selectable
- Numerical, categorical and free text mixed in one column
- Many false statements, transmission errors
- 90 different languages

So, we had to: Analyzing each question, one by one