The CEO Water Mandate

Water and Climate Change: main impacts in the Southeast region of Brazil and possible ways to address this challenge

Agenda

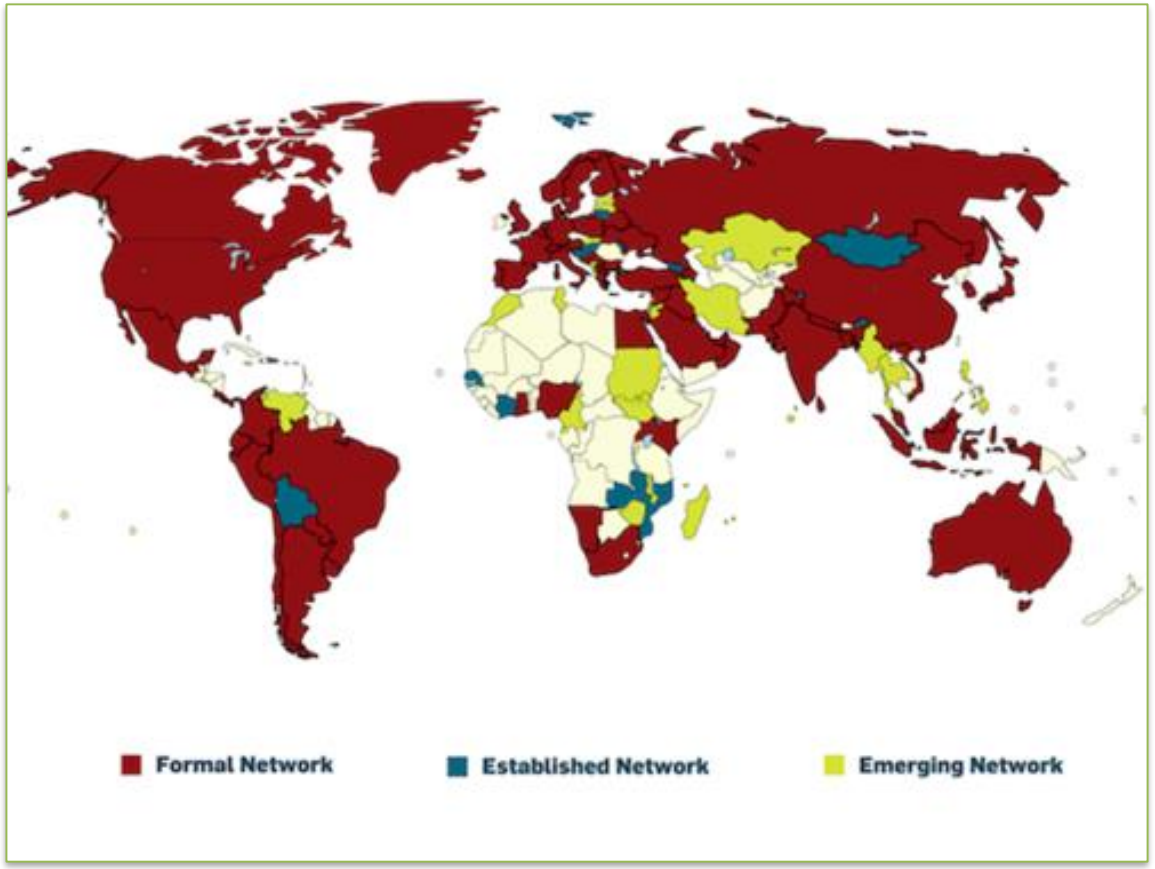
1. Introduction to United Nations Global Compact (UNGC)
2. Global Climate Change Background
3. Main impacts of climate change on water resources in the Southeast (SE) Region of Brazil and possible ways to address this challenge
4. Examples of practices in Brazilian companies
5. International platforms on climate change

The CEO Water Mandate

Introduction to United Nations Global Compact (UNGC)

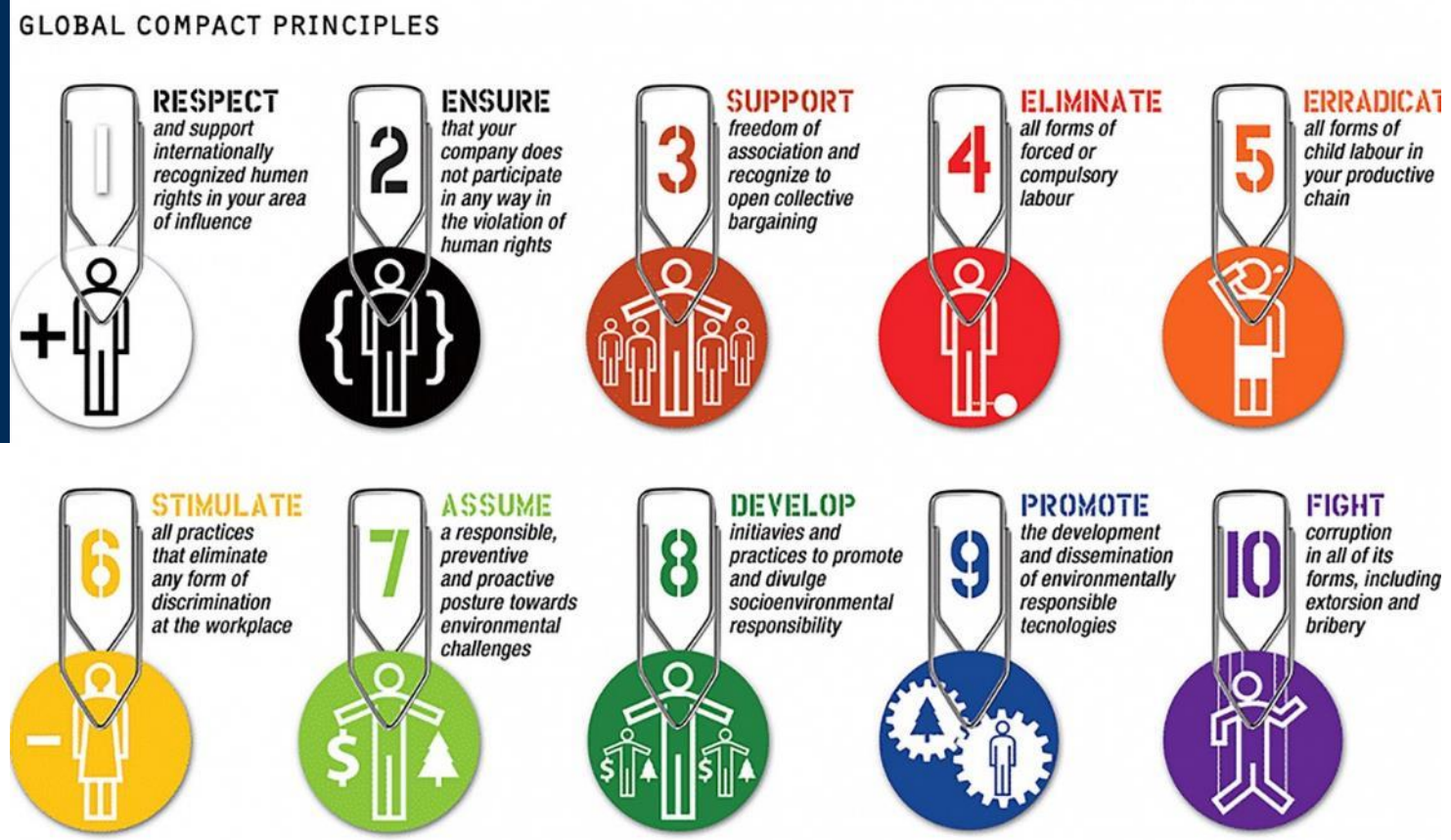
United Nations Global Compact (UNGC)

- Launched by UN Secretary-General Kofi Annan in 2000;
- With more than 12,000 signatories, 9,000 of which are companies;
- More than 85 Local Networks in 100 countries;
- The world's largest voluntary corporate citizenship initiative.



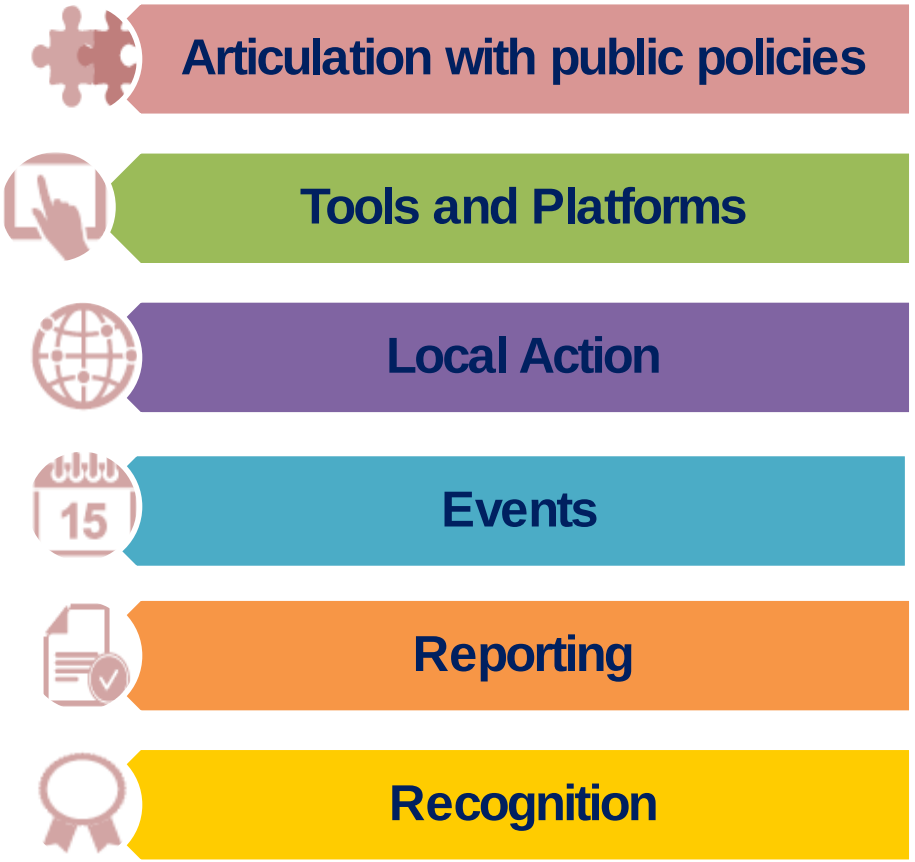
United Nations Global Compact (UNGC)

The Ten Principles of the UN Global Compact



United Nations Global Compact (UNGC)

Value Proposition of the UN Global Compact



Global Compact Brazilian Network

- **Launched in 2003;**
- **The Global Compact Network in Brazil today is the fourth biggest local network, with more than 700 signatories (250 SMEs);**
- **Partnership with UNDP since 2011;**
- **Governed by a committee of 40 organizations;**
- **Board: BASF; B3, CPFL Energia, ENEL Brasil and Itaú Unibanco;**

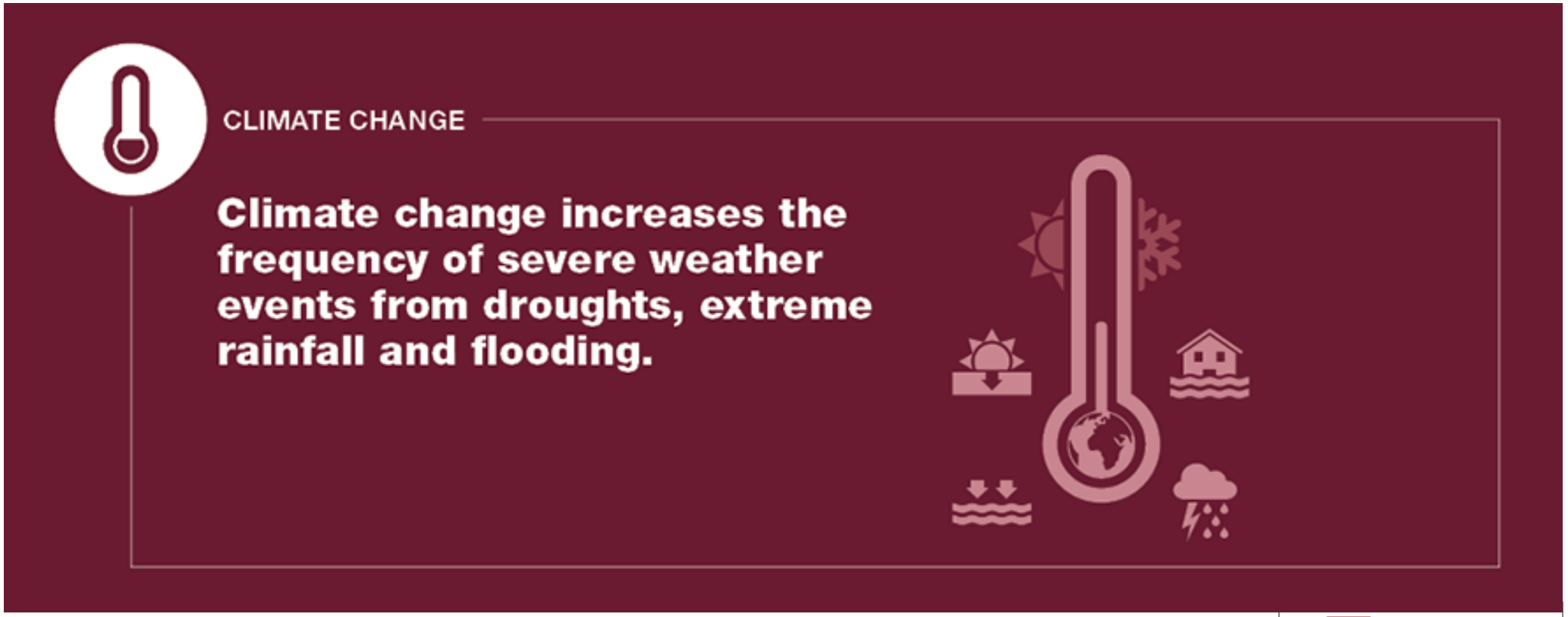
Six lines of action:

- **Anti-corruption;**
- **Human rights;**
- **Water;**
- **Food and Agriculture;**
- **Energy and Climate;**
- **Sustainable Development Goals - (SDGs).**

Sustainable Development Goals (SDGs)

Global Climate Change Background

What's the problem?



Source: CDP infographic report 'Who's tackling urban water challenges?', case studies and full data at: www.cdp.net/cities

CDP
DRIVING SUSTAINABLE ECONOMIES

Water Secutity

Climate change → increasing water stress;

- **Reduction on the renewable freshwater resources in most dry subtropical regions;**
- **Uncertainty of availability of reliable water supplies on an annual basis;**
- **Impacts to water supply, agriculture and industries.**

Challenges and Opportunities:

- **Measurement and dissemination of data;**
- **Local rainfall patterns;**
- **Characteristics and current status of basins and aquifers;**
- **Corporate indicators on water use;**
- **Direct and indirect impacts on companies;**
- **Implementation of water management strategies.**

Sustainable Development Goals (SDGs)

- SDG6: **Ensure availability and sustainable management of water and sanitation for all;**
- SDG13: **Take urgent action to combat climate change and its impacts;**
- **Water is an enabler for achieving all the core SDGs;**
- **Water availability → is a key ingredient for agricultural and broader economic growth;**
- **A major impact of climate change is on the hydrological cycle;**
- **95% of all hazards associated with climate change are water-related;**
- **Adaptation strategy on agriculture → water security;**
- **Renewable energy such as wind and solar technologies.**

Blueprint for SDG Leadership

BLUEPRINT FOR BUSINESS LEADERSHIP ON THE SDGS

13 CLIMATE ACTION

- **2030 Agenda → engagement from all businesses;**
- **Framework for companies aiming towards SDG leadership;**
- **Assessment of the qualities of current and past business action on the SDGs;**
- Five qualities of SDG leadership: intentional; ambitious; consistent; collaborative; and accountable.

Targets of Goal 13

13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Business Actions

1 → Ensure climate resilience of company and supply chain operations, and the communities surrounding them;

2 → Substantially reduce emissions associated with own and supply chain operations, in alignment with climate science;

3 → Shift to a portfolio of goods and services that have, and promote, negligible emissions from use;

4 → Promote climate conscious behavior and build capacity for climate action.

Paris climate agreement

- **To address climate change, countries adopted the** Paris Agreement **at the** COP21 **in** Paris **on 12th December 2015.**
- **Essential for the achievement of the** Sustainable Development Goals (SDGs).

What are the key elements?

- **Keep global temperatures below" 2.0°C (3.6F), endeavor to limit to 1.5°C;**
- **Limit the GHG emissions by human activity to natural carrying capacity;**
- **5 year review of NDC;**
- **Climate finance.**

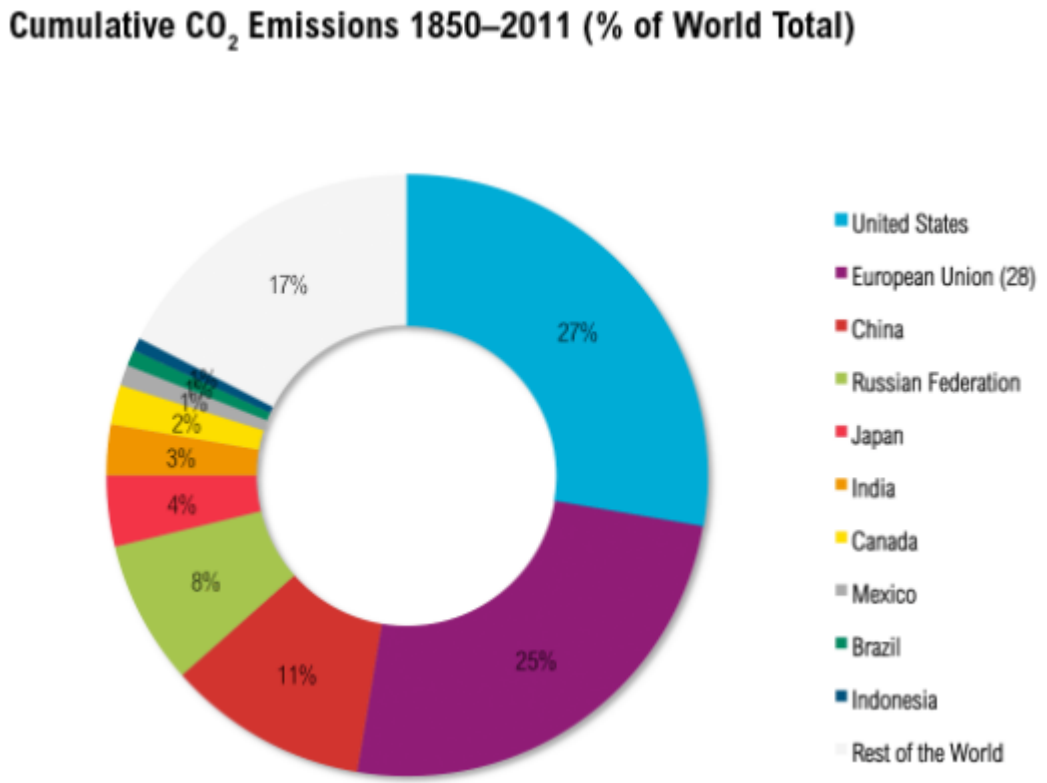
Source:
http://www.wri.org/blog/2015/12/paris-agreement-turning-point-climate-solution

The challenge of climate change

- **The challenge of climate change and how to address on the global agenda;**
- World's **biggest carbon emitters: US, China, India, the EU and Brazil;**
- **The Paris Agreement → ratified by the international community.**

Companies – roles and opportunities:

- **Can move much faster than governments;**
- **Opportunity to demonstrate their leadership;**
- **Agility and creativity in curbing their own substantial emissions;**
- **Many companies had already realized the need for action before Paris;**
- More companies need to come on board.



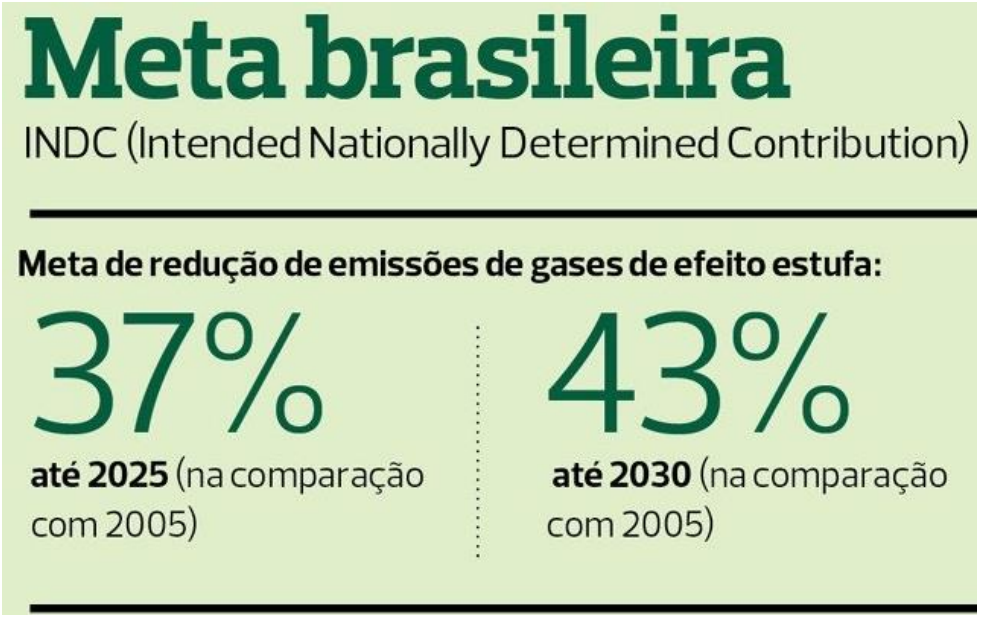
Source: https://wri.org/blog/2014/11/6-graphs-explain-world's-top-10-emitters

The Brazilian NDC

- **Each committed nation has established its own targets the so called NDCs, or Nationally Determined Contributions.**
- **The Brazilian NDC predicts a reduction of 37% on the emissions of greenhouse gases until 2025 and of 43% until 2030.**

To achieve that there are targets in several areas:

- **To reach zero illegal deforestation and restore 12 million hectares of forests;**
- **To restore 15 million hectares of degraded pastures;**
- **To elevate the participation of bioenergy to 18% and renewable to 33% of the energy matrix;**
- **To improve the infrastructure of roads and bring more innovation to the modes of urban public transport;**
- **To increase energy efficiency and to use clean technology in industry.**



The National Adaptation Plan (NAP)

- **It was instituted on May 10, 2016;**
- **Developed by the federal government in collaboration with civil society, the private sector and state governments;**
- Objective: **to promote the reduction of national vulnerability to climate change and to manage risk associated with this phenomenon;**
- **The** 11 sectors **addressed in the preparation of the plan;**
- **The plan establishes goals with** a four-year implementation period**, with their respective revisions;**
- **These goals are part of the** contributions (NDCs) **that Brazil has sent to the United Nations;**
- **The plan sets general and sectoral goals;**
- **The goal established by the Ministry of Health:**
  - **Extend, until 2019, to 85% the percentage of Brazilian municipalities served by the National Water Quality Program for human consumption (Vigiagua).**

PNA – Adaptation Strategy Water Resources

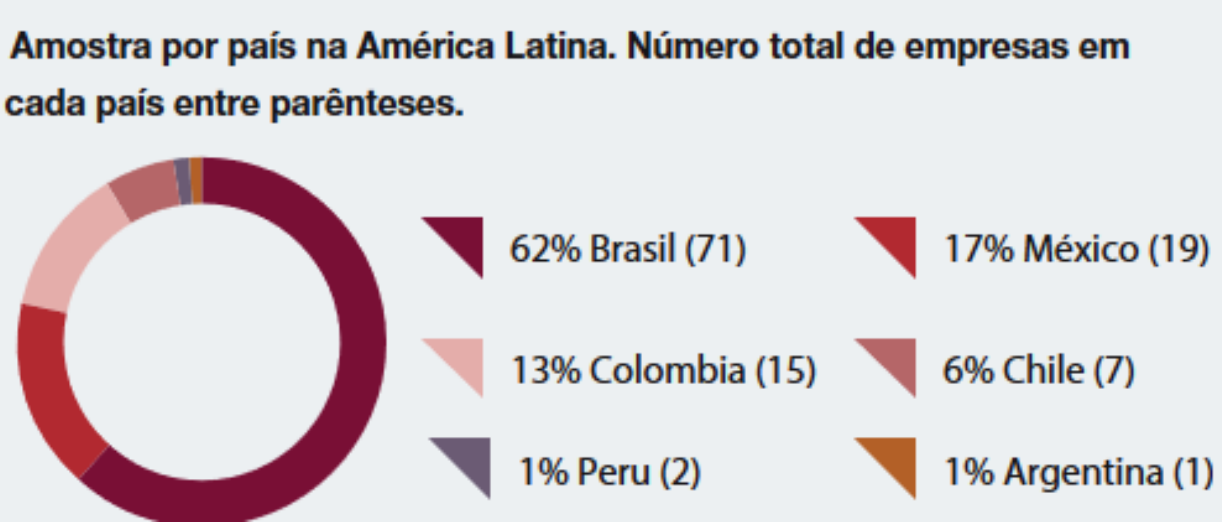
Sectoral and Thematic Strategy: Water Resources		
Goal 3.9	**Initiatives**	**Responsible**
Incorporate measures for adaptation to climate change into actions carried out by the National Water Agency.	Identify/propose "no regrets" adaptation measures, targeted at enhancing capacity to respond of the National Water Resources Management System and at reducing vulnerabilities of the main water-user sectors, populations and ecosystems to foreseen adverse effects.	ANA
Indicator/Monitoring:	Progress in deployment of water resources management projects and instruments.	
Impact:	Enhanced the capacity of ANA and of other component bodies of the National Water Resources Management System (SINGREH) to respond to challenges posed by climate change	

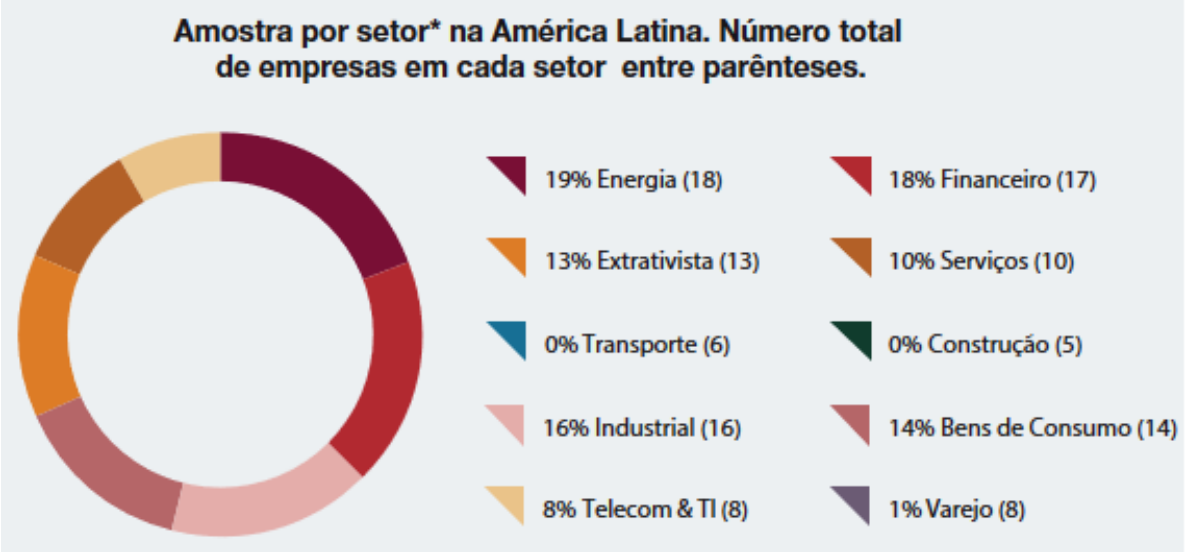
Sectoral and Thematic Strategy: Water Resources		
Goal 3.10	**Initiatives**	**Responsible**
Develop integrated climatic and hydrological models and assess their impact on water resources management	Use of new modelling techniques with dynamic and statistical methods borrowed from other Global Climatic Model (GCM) families, thereby increasing the number of projections available for analysis of the impact of climate change on water resources;	ANA
	Develop studies using Economics of Climate Adaptation (ECA) methodology, based on the Piracicaba-Capivari-Jundiai River Basin project;	
	Enlist scientific and technological inputs, by means of a specific call for proposals to be drafted jointly with CNPq, targeted at the climate-change/ water-resources interface.	
Indicator/Monitoring:	Progress in the development of projects.	
Impact:	Enhanced capacity of component bodies of SINGREH to respond to challenges posed by climate change.	

Source: http://www.mma.gov.br/images/arquivo/80182/PNA_Volume%20I_EN.pdf

CDP's Report 2016 – Latin America

- **Report** "Natural **capital: transparency and management as risk mitigation** strategies"**;**
- **115 companies responded to the questionnaire on climate change in 2016 in the programs of Climate Change, Water and Forest.**

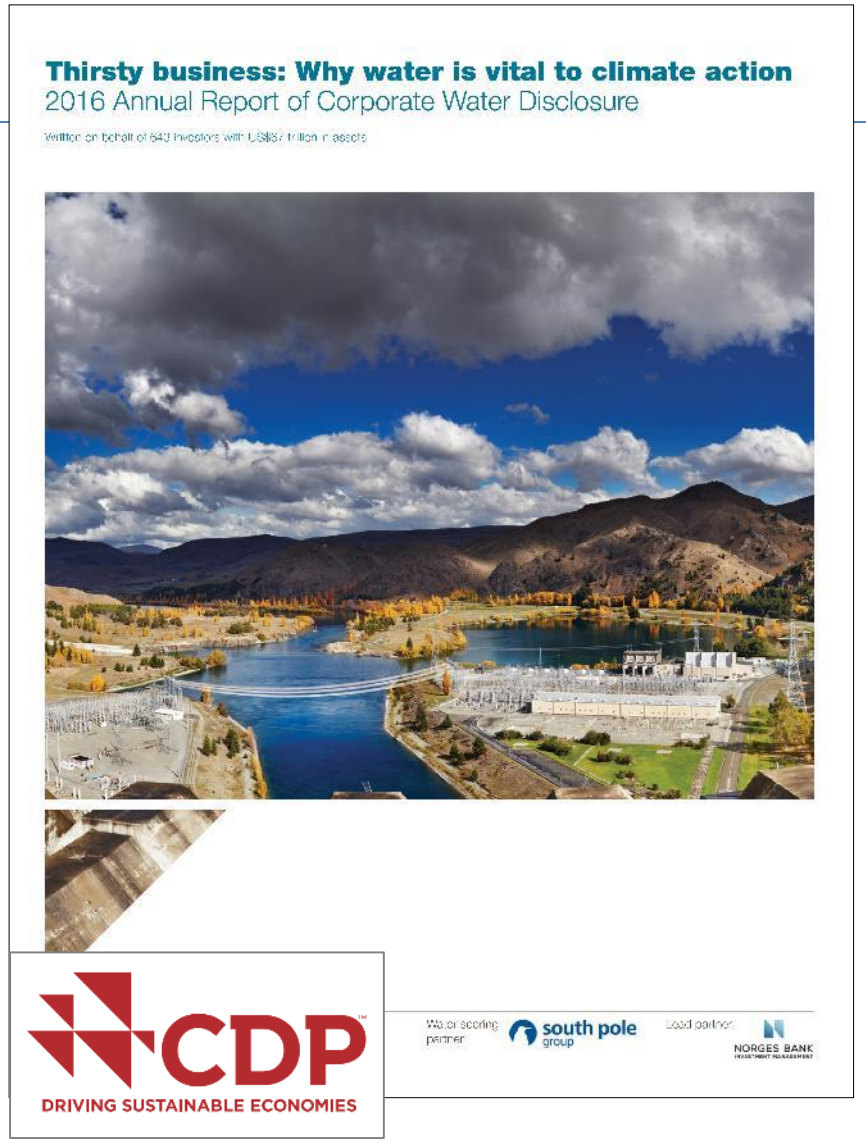




Source: http://cdpla.net/relatorio/?page=1

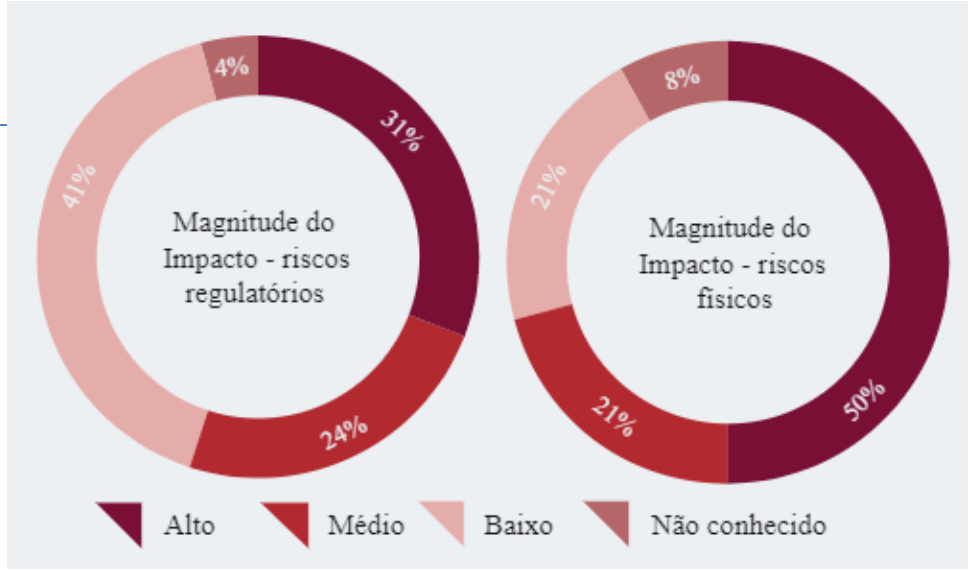
Water and Climate for Businesses

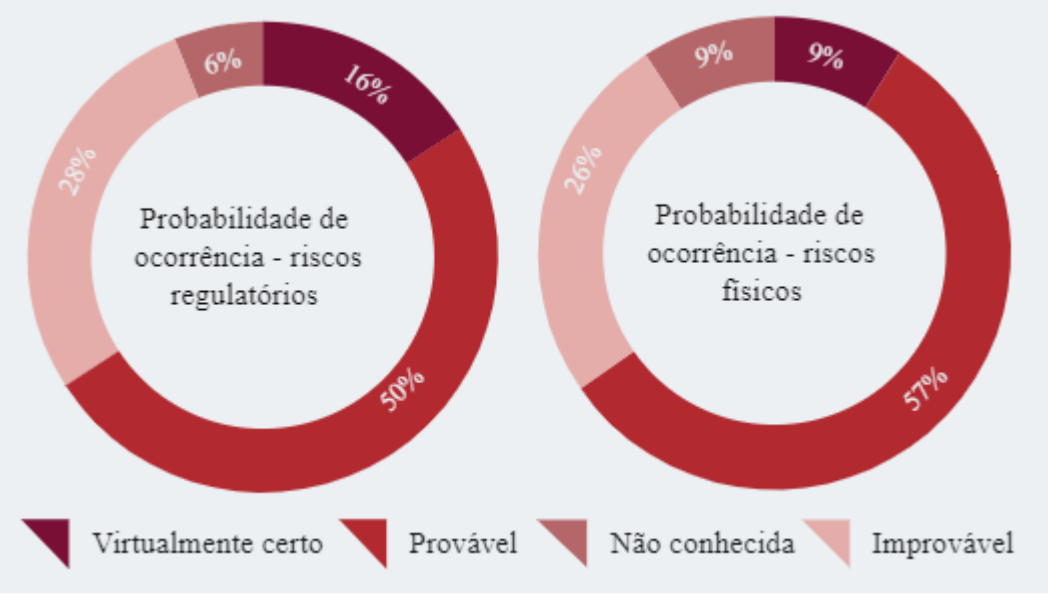
- **US$14 billion in water-related impacts, a five-fold increase from last year (2015);**
- **Over a quarter of companies experienced detrimental impacts from water;**
- **Companies expect over half (54%) of the 4,416 water risks they identified to materialize within the next six years;**
- **The Paris deal creates more demand and pressure to improve water management;**
- **53% of companies report that better water management is delivering GHG reductions;**
  - **Increasing numbers of companies recognizing the value of managing water in a more holistic sense;**
  - **More companies are citing water stewardship as the basis for their water targets.**

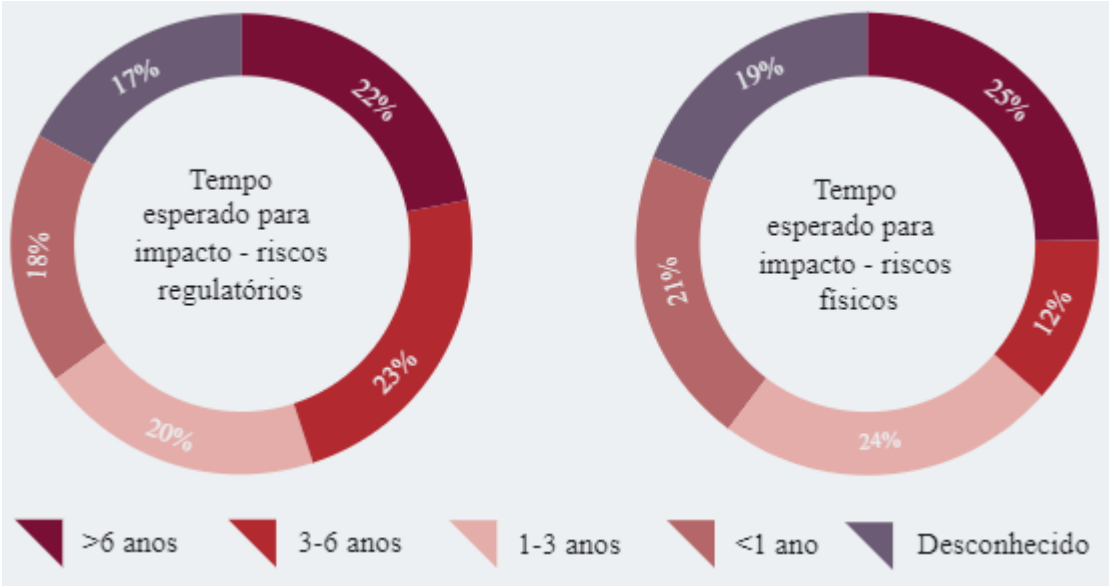


Water risks for businesses

- **Physical or Regulatory Risks;**
- **Climate change is a material risk component;**
- **Restrictions for business growth in the coming decades.**



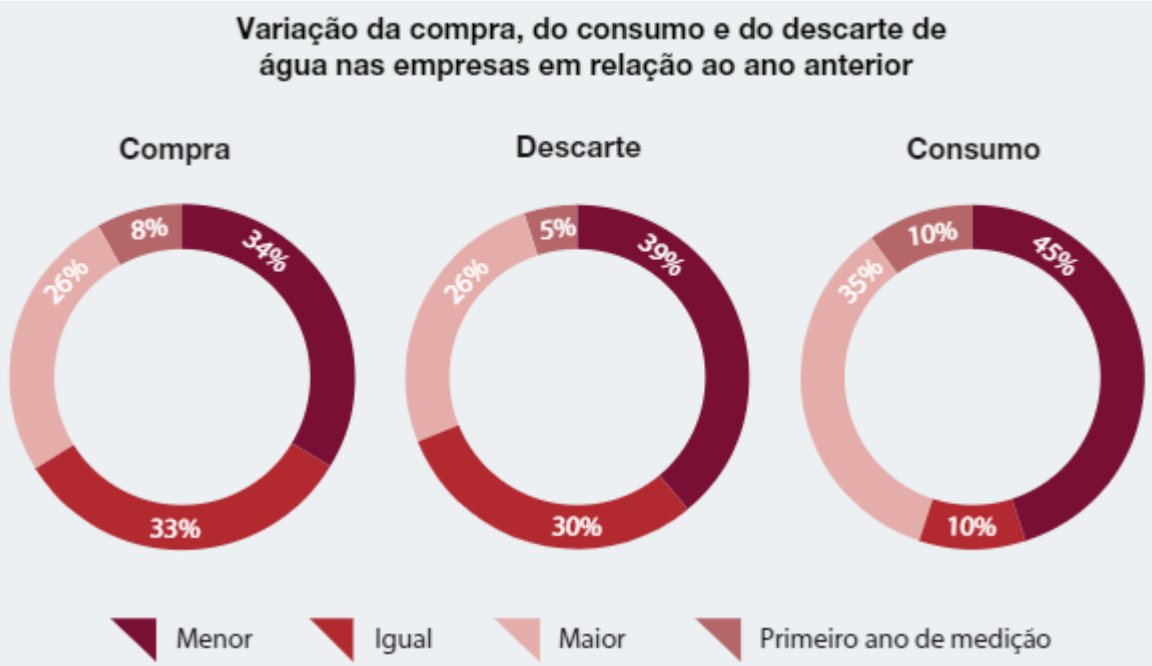




Source: http://cdpla.net/relatorio/?page=1

Type of water use by companies in South America

- Idea that stable supply of good quality water will always be available;
- Business models based on this premise;
- Increased water stress and water insecurity;
- Financial risks to some companies and their investors;
- Most of the companies that answered the questionnaire have already noticed this critical situation;
- Actions to reduce water use in your business.



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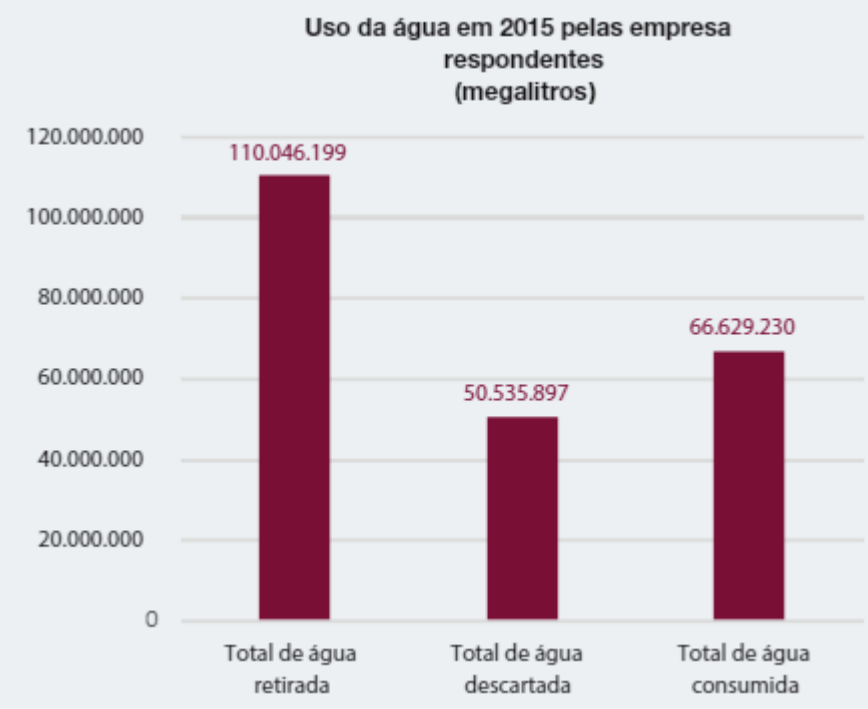
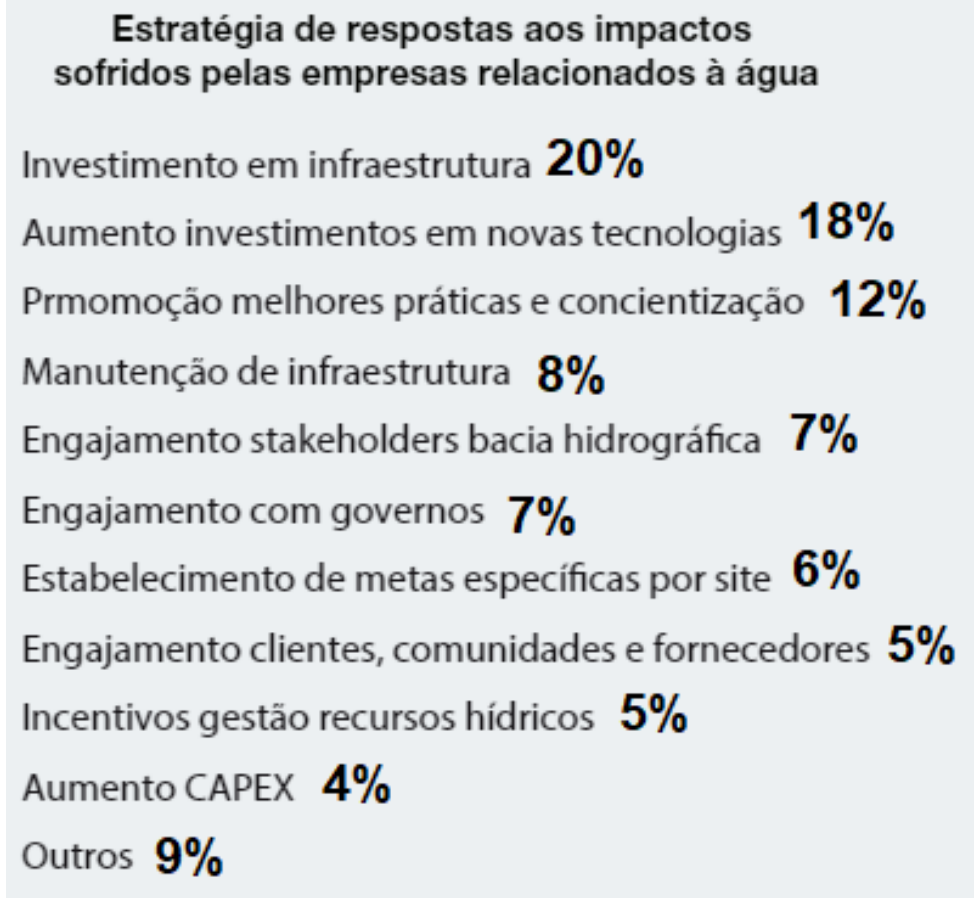


Impact management and value chain

- **Main negative impacts** → physical;
- Reputational and regulatory impacts → **scarcely mentioned;**
- **The food and beverage sector stands out with several internal management strategies to respond to this challenge;**
- **Example → Ambev: SAVEh – Hydroefficiency self-evaluation System;**
- **Investment in infrastructure (20%) and new technologies (18%) and the promotion of awareness (12%) are highlighted strategies;**
- **Extractive and energy sectors: external response strategies such as engagement with stakeholders in the river basin and with public policy makers (governments).**



Source: http://cdpla.net/relatorio/?page=1

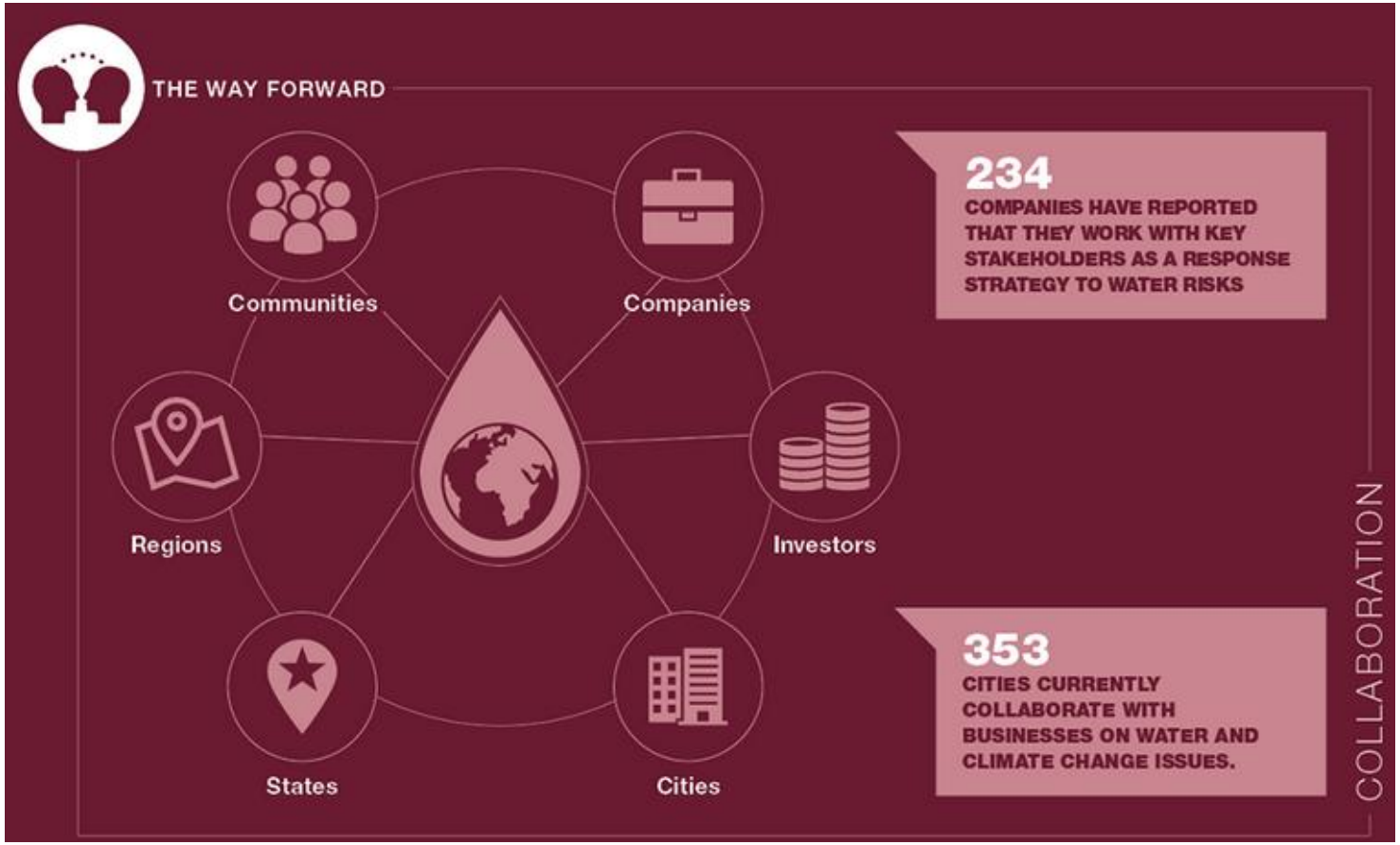
General Motors Company – Brazil

- Drought pushed up water costs by US$2.1 million in 2015;
- Reduced availability of hydropower pushed up electricity costs by US$5.9 million;
- Company responses → increased water conservation efforts and energy efficiency measures.

GENERAL MOTORS DO BRASIL

- **Companies face costs from fines and penalties, delays in permitting, and brand damage;**
- **Energy sector → 47% reporting paying penalties or fines in 2015;**
- **The degree of risk for a company is a function of how the availability of water impacts on its business, and how its use of water impacts on people and ecosystems;**
- **Comprehensive risk assessment → to develop a clear understanding of physical, regulatory and reputational exposures as well as opportunities available.**

Successful water governance means working together



- **Strategic change to become water secure;**
- **Internal engagement at the very highest level;**
- **Companies need to look beyond their direct operations;**
- **Long-term plans and strategies to support the Paris Agreement and the Global Goals (SDGs);**
- **Opportunities to make business models more sustainable and resilient;**
- **Collective action.**

Source: CDP infographic report 'Who's tackling urban water challenges?', case studies and full data at: www.cdp.net/cities

Questions

Main impacts of climate change on water resources in the Southeast (SE) Region of Brazil and possible ways to address the challenge

Effects of climate change on water resources in the SE Region of Brazil

- 85% of disasters in Brazil: flash floods, landslides and prolonged drought;
- Effects can be largely attenuated → government policies aimed at damage mitigation;
- The risk of occurrence of these three types of disaster, → increase by the end of this century;
- The impacts tend to be greater in the future due to:
  - Climate change,
  - Growth of city boundaries and populations,
  - Occupation of more high-risk areas.

Source: http://revistapesquisa.fapesp.br/en/2017/05/16/a-more-vulnerable-brazil-in-the-21st-century/

Source: https://www.theguardian.com/world/2015/jan/23/brazil-worst-drought-history

Effects of climate change on water resources in the SE Region of Brazil

- Changes in precipitation patterns in Brazil;
- **Increase in both the volume of water and the average number of days in which it rains in the State of São Paulo;**
- In Rio de Janeiro and Espírito Santo → **reduction in the average volume of precipitation for the next years;**
- **Where it rains a lot will rain more;**
- **Where there's drought will get drier;**
- **The concentration of rain in less days in Rio de Janeiro → tendency to aridity;**
- **Drying in the North and Northeast and the wetting in the South and Southeast.**

A comprehensive analysis of trends in extreme precipitation over southeastern coast of Brazil

Source:
http://agencia.fapesp.br/sao_paulo_devera_ter_mais_chuva_nos_proximos_anos_indica_pesquisa/25873/

Case study of the city of Santos (SP)

- **Sea-level rise (SLR) → threats to natural and built environments in coastal zones;**
- **Assessment of the risks due to exposure and sensitivity of coastal communities to coastal flooding;**
- **Strategies for public understanding and awareness of the effects of climate change;**
- METROPOLE Project: **team of natural and social scientists from the USA, the UK, and Brazil;**
- **Evaluate how local governments may decide between adaptation options associated with SLR projections;**
  - **Participatory approach;**
  - **Method for evaluating risks jointly with the community:**
    - **Comparing** 'no-**action**' **to** '**adaptation**' **scenarios.**

A study by *Project Metropolis*, using Santos, in Brazil, as an example, considered only the damage to buildings. Researchers predict far higher losses in other areas, including health and education, if nothing is done (*photo: Agência FAPESP*)

Source:
http://agencia.fapesp.br/cost_of_not_adapting_to_climate_change_would_be_at_least_five_times_higher_/26110/

Case study of the city of Santos (SP)

Costs of adaptive measures:

- ❑ **Adaptive construction projects → would cost at least R$300 million;**
- ❑ **Failure to adapt to climate change → would cost at least R$1.5 billion;**
- ❑ **The cost could be underestimated at R$1.5 billion;**

Health impacts:

- **Expenditure on patient hospitalizations and treatments would rise by at least R$720,000;**

Options for adaptation:

→ **Fortification using revetments, seawalls and structural enhancements;**

→ **Beach replenishment;**

→ **Mangrove rehabilitation, which can be classified as an ecosystem-based adaptation;**

- Challenge: **Public investment is required to implement the planned adaptation measures.**

Municipal Climate Change Adaptation Plan (MCCAP) – Santos (SP)

- December 2016 → **Municipal Climate Change Adaptation Plan (MCCAP);**
- **Workshop "Immediate and Definitive Engineering Solutions for the Protection of the Santos Bay";**
- **One of the first cities in the country to create this type of plan;**
- May 2016 → **National Adaptation Plan to Climate Change, Ministry of Enviroment (MMA);**
- Next step of the plan → **seek greater involvement of the population, civil society, NGOs and institutions with the theme.**

Source:
http://www.santos.sp.gov.br/?q=aprefeitura/secretaria/meio-ambiente/plano-municipal-de-mudanca-do-clima-de-santos

Plan Recommendations:

- **Climate Change Database;**
- **Encouraging public and private initiatives;**
- **Monitoring of health risk factors;**
- **Participation of civil society, NGOs and universities in consultative and deliberative processes;**
- **GHG emission reduction targets, with mitigation and adaptation strategies;**
- **Continuous monitoring for risk prevention;**
- **Capacitation of the population to deal with risk situations;**
- **Measures of energy efficiency, water resources and expansion of green areas.**

Effects of climate change on water resources in the SE Region

- **The drought in the northwest of São Paulo;**
- **Reached the level of the hydroelectric reservoirs;**
- **The most critical situation was registered in the Marimbondo hydroelectric plant in Icém (SP);**
- **Water levels:**
  - **In March → reached 80%;**
  - **In September → reached 23%.**
- **The hydroelectric power supply was not affected;**
- **Brazilian system.**

Hydroelectric plants in the northwest of São Paulo are operating at a low level (September, 2017)

Source: https://g1.globo.com/sao-paulo/sao-jose-do-rio-preto-aracatuba/noticia/seca-atinge-reservatorios-de-hidreletricas-e-usina-de-icem-chega-a-23-da-capacidade.ghtml

Climate change and loss of coffee production in the states of SP and MG

- **Estimate of The Brazilian Panel on Climate Change — PBMC:**
  - ➢ **Loss of about 11 million hectares of arable land by 2030;**
- **São Paulo and Minas Gerais: main coffee producers;**
- **IPCC (2014) → warned of the decline in coffee cultivation in Brazil;**
- **1998 – 2008: São Paulo lost 35% of cultivated area with arabica coffee;**
- **Agricultural sector needs to work to mitigate and adapt;**
- **Search for solutions to water scarcity conditions:**
  - ➢ **Planting of deeper root and genetically modified plant species;**
    - ❖ **The measure helped reduce losses in corn and soybean plantations;**
    - ❖ **High investment;**
  - ➢ **Development of crops tolerant to heat and drought.**

Questions

Examples of practices in Brazilian companies

Nestlé – Coffee chain

- **Search for solutions with farmers → focus on environmental efficiency, respect for human rights, quality and economic prosperity.**
- **Nestlé Commitments in the coffee chain:**

- NESCAFÉ Plan
- AAA Sustainable Quality Program

→

Actions:
- **Responsible use of water resources;**
- **Reduction of post-consumption impacts.**

- **2016 → climatic factors (low rainfall indices) → significantly impaired coffee production;**
- **Impacts on the business and challenges for the company and its agricultural producers → search for solutions in quality and productivity.**

Fonte:
http://corporativo.nestle.com.br/asset-library/documents/rs2016_2.pdf

Nestlé – Nescafé Plan

- **2016 → 11 thousand tons of green coffee were traded;**
- **Raw material was generated by agricultural producers undergoing training, technical support actions and management training and programs for the rational use of resources and reduction of environmental impact.**
- **Change in rainfall regime → training and seminars on the rational use of water.**
- **418 producers, professionals and technicians involved in agricultural production were engaged in relation to water use legislation and the work of the River Basin Committees.**

Next steps:

- **Global review to seek new methodologies for measuring results;**
- **Construction of improvement plans for socio-environmental issues.**

Source:
https://www.nestleprofessional.us/sites/g/files/gfb131/f/media/nescafe-plan-poster.pdf

Nestlé → Nespresso

- **Dialogue with local and international partners;**
- **Joint actions for themes such as: biodiversity, adaptation to climate change and rural development.**
- Local Partners: **Institute of Ecological Research (IPÊ), Institute of Agricultural and Forest Management and Certification (Imaflora) and International Union for Conservation of Nature (IUCN), in addition to the river basin committees of the regions.**
- 2015: **was signed the Consortium Cerrado das Águas (MG);**
- Nespresso → **participation in pilot projects related to the recovery of high biodiversity areas responsible for the provision of ecosystem services.**
- Córrego Feio River Basin, in the region of Patrocínio (MG) → **multisectoral project composed of governments, companies and NGOs in order to recover the microbasin.**

Source: https://www.nespresso.com/ie/en/track-your-order

Agua Brasil "The Brazil Water Programme"

- **Initiative of Banco do Brasil, in partnership with the Banco do Brasil Foundation, WWF-Brazil and the National Water Agency (ANA).**

Objectives:

- **To disseminate sustainable actions,**
- **To develop business models;**
- **To mobilize the population to improve quality and increase water quality in the country.**

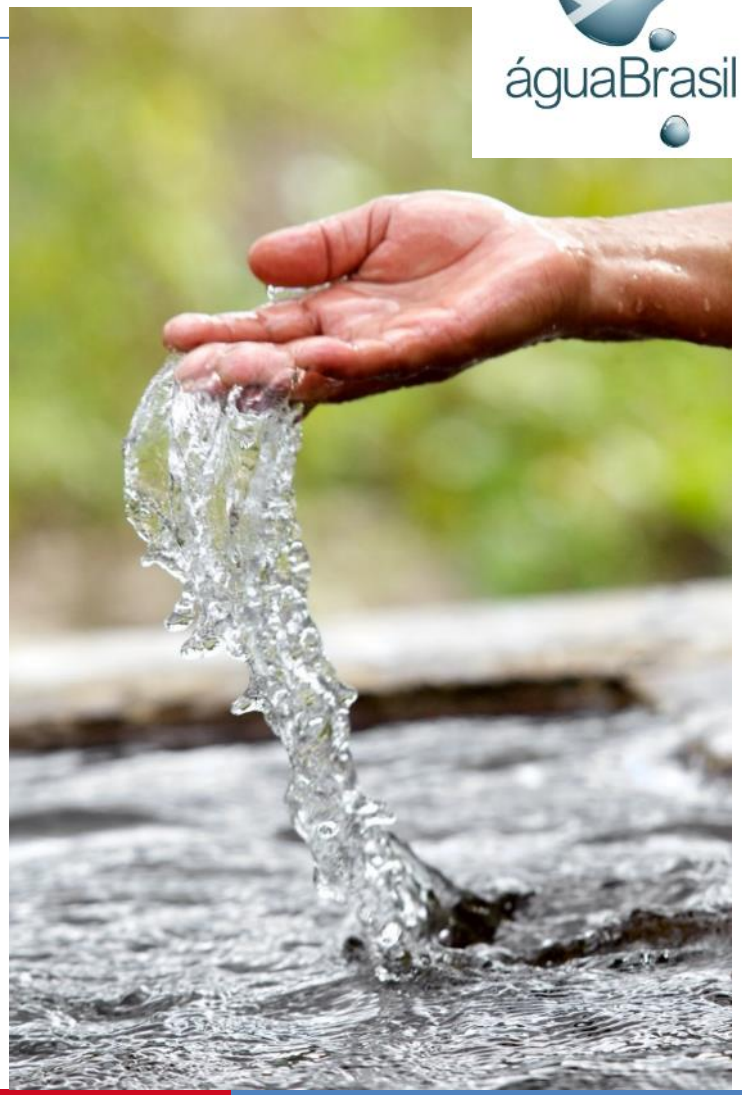
- 2010 **–** 2015**: more than 11 million people were benefited directly and indirectly in the axes** Water and Agriculture **and** Sustainable Cities.
- **The investment was R$58 million.**

Partners:

Source: http://www.bb.com.br/docs/pub/siteEsp/uds/dwn/AguaResultado.pdf

Agua Brasil → Main results

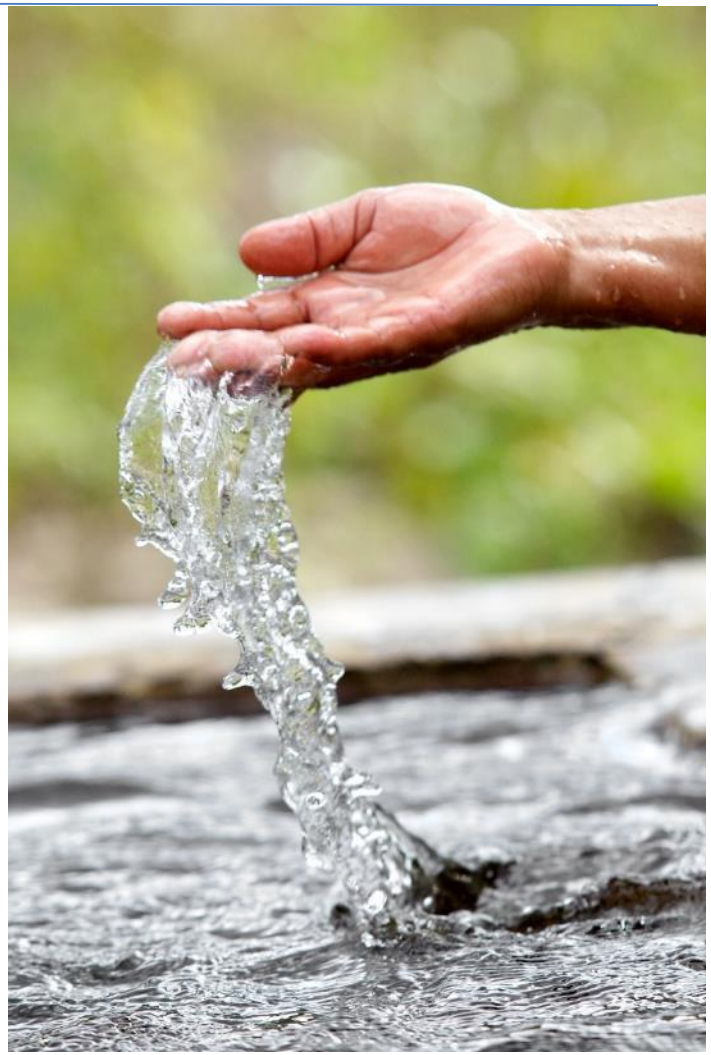
- Water crisis in Brazil between 2014-2015**;**
- **I**mprovements: water management and protection of watersheds**;**
- Protection of seven Brazilian watersheds: **Longá (PI), Pipiripau (DF), Guariroba (MS), Santa Rosa (AC), Peruaçu (MG), Tietê-Jacaré (SP) and Cancã-Moinho (SP);**
- Improvement in water governance:
  - Principle of multiple uses (National Water Resources Policy);
  - Resolution of conflicts.
- Protection of springs → planting of seedlings, recovery of degraded areas and diffusion of best agricultural and agroecology practices.
- Incorporation of the issue of water security into the agricultural credit policy of Banco do Brasil → reduction of risks and better water governance in rural areas.



Agua Brasil “The Brazil Water Programme”– Next steps

2016 – 2020: investment of R$ 50 million;

- Increase water availability and increase the coverage of native vegetation;
- Business models → restoration and management of forests, water and energy efficiency;
- To make society aware of the smart use of water and the environment;
- New studies and tools → socio-environmental risk management;
- Innovative initiatives in water resources management;
- Action in the **Cerrado biome** → Amazon and São Francisco basins;
- Contribute to the achievement of the goals of the Brazilian NDC:
  - Voluntary reduction of greenhouse gas emissions;
  - Recovery of native forests.



Case: Braskem

- Study to identify the potential impacts to its operations in four regions in Brazil, assessing the risks of current and future water shortages by 2040;
- Definition of targets for reducing water abstraction;
- Need to engage other actors interacting in these river basins;
- Water reuse sources: rainwater, treated domestic sewage and industrial effluents;
- In 2015, the reuse rate reached 25%, with that about 16.6 billion liters ceased to be extracted from water bodies;
- Braskem seeks, in partnership with its customers:
  - To develop applications that contribute to the efficient use of water in the supply chain;
  - To reduce water losses in the distribution systems of treated water.

Braskem

International platforms on climate change

Caring for climate (C4C) platform

- **Launched by UN Secretary-General Ban Ki-moon in July 2007;**
- **Jointly convened by the United Nations Global Compact (UNGC) and the United Nations Environment Programme (UNEP) and the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC);**

➢ Objective: **To mobilize a critical mass of business leaders to implement and recommend climate change solutions and policies;**

The basic elements of the C4C commitments are as follows:

1. Reduce emissions, set targets, and report annual performance;

2. Devise a business strategy to approach climate risks and opportunities;

3. Engage with policymakers to encourage scaled up climate action;

4. Work collaboratively with other enterprises to tackle climate change;

5. Become an active business champion, working with stakeholders.

Caring for Climate

Source: www.caringforclimate.org

Caring for climate (C4C) platform

Workstreams:

- Carbon Pricing
- Science-Based Targets
- Climate Policy Engagement
- Climate Adaptation and Resilience
- Transparency and disclosure

Why companies should engage in Caring for Climate?

- **Demonstrate leadership;**
- **Increase visibility;**
- **Showcase Action;**
- **Share best practices;**
- **Shape policy agenda.**

Join Caring for climate:
http://caringforclimate.org/about/join-caring-for-climate/

UN Partners & Strategic Partners:

Business Alliance for Water and Climate

BAFWAC

- **Launched by CDP, CEO Water Mandate, SUEZ, and World Business Council for Sustainable Development (WBCSD) in December 2015;**
- **The initiative commits companies to analyze and report water-and-climate-related risks and impacts, and to implement collaborative response strategies along the value chain;**
- 50 member companies → goal is 100 by 2018.

Key objectives are to:

- **Increase the number of companies committed to BAFWAC actions;**
- **Ensure broad uptake and action on improving water security from the private sector;**
- **Track progress from committed companies as to their progress on each of the three areas of action.**

The three areas of action are:

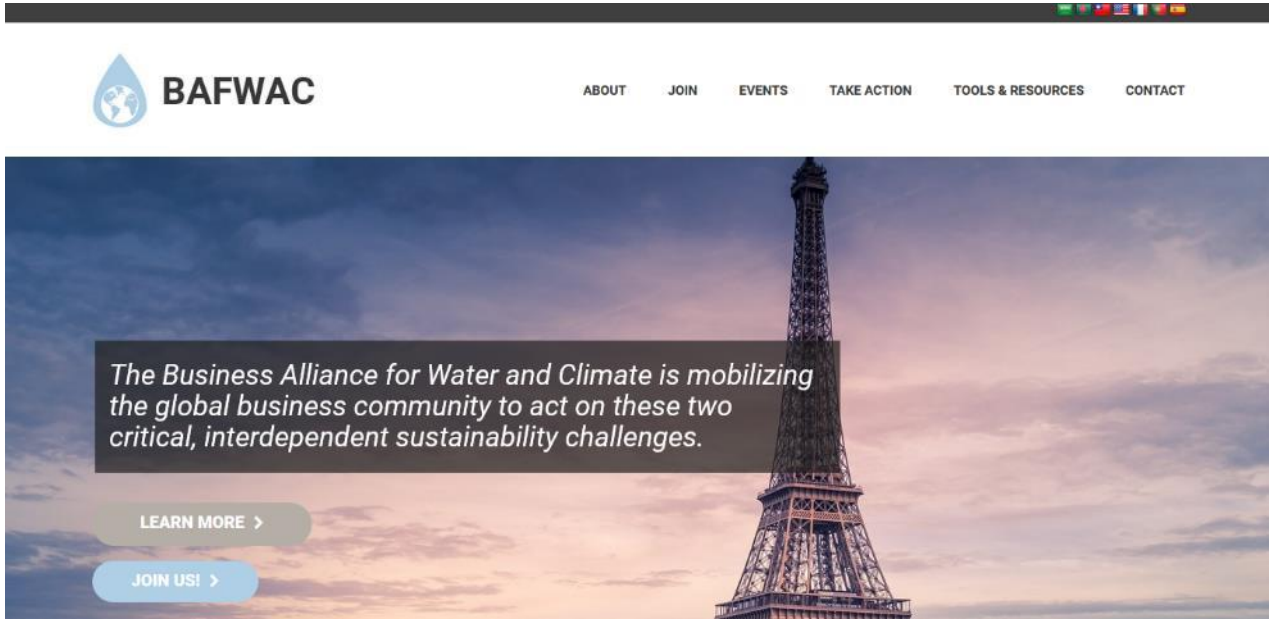
- **Climate resilient agricultural supply chains;**
- **Circular water management: water reuse and resource recovery;**
- **Natural infrastructure (including hybrid green/grey solutions).**

Business Alliance for Water and Climate

BAFWAC

- **Platform for members to gain and share knowledge;**
- **Toolbox: guidance, case studies, best practice, tools;**
- **Engage in collective action → Water Action Hub;**
- **Links between projects in the Water Action Hub with the SDGs;**
- **This makes easier for companies to be involved in water stewardship with a focus on achieving SDGs;**
- Born out of COP21, will be presenting progress update at COP23.

New BAFWAC website: https://bafwac.org/



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Questions

Thank you

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