Cop23, Bonn. Credit : pS-Eau

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Our report from:

COP 23

Bonn, Germany, 6-17th November 2017

The 23rd Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC), organised under the presidency of Fiji, took place in Bonn, Germany, from the 6th to the 17th November 2017.

For the second consecutive year, a thematic day was dedicated to water on the 10th of November, as part of the Global Climate Action agenda. Two other themes, agriculture and energy, were addressed in parallel this same day, which gave the opportunity of joint sessions. The theme of water was also discussed during several side-events in the exhibition area dedicated to the civil society ("Bonn zone").

The pS-Eau attended this COP from the 8th to the 14th of November and took part in several sessions of the "Bonn zone", in order to promote its work on water and sanitation services and climate change and share experiences on this topic. The COP23 was also an opportunity to meet several organisations of the climate sector, which are usually less represented in the water conferences.

You'll find in this report a summary of different discussions and sessions around the topic of water and climate change, with a focus on water, sanitation and hygiene (WASH) services.

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Challenges and outcomes of the conference

Since the adoption of the Paris Agreement during COP21 in 2015, the political processes are focusing on its implementation, which aims to limit the average increase of temperature on the planet to 2°C, if not 1.5°C. Up until this day, 170 countries out of 197 have ratified the Agreement.

For the first time, the COP was organised under the presidency of a small island developing state, the Republic of Fiji. However, despite some progress of the negotiations, in particular regarding the recognition of indigenous people, the outcomes of the conference are mixed and in contrast with the call of many scientists to act urgently. It is indeed estimated that the current commitments of the states won't be sufficient to remain under a global increase of temperature of 2°C but would rather lead to a trajectory of +3°C.

The next COP24 will take place in Poland in 2018. This conference will be an important milestone, as it will aim to undertake a first review of the country efforts for the implementation of the Paris Agreement, and to prepare a possible readjustment of the Nationally Determined Contributions (NDCs) of some states by 2020.

Resources:

- *Official COP23 website: https://cop23.com.fj/*
- *Programme of the official sessions: https://cop23.unfccc.int/cop23/global-climate-action-at-cop23-full-programme*

Below, we're reporting a few points that emerged from the discussions and sessions in the Bonn zone and that seemed of interest to us, with regard to the development of water and sanitation and hygiene (WASH) services in developing countries:

❖ Implementation of the Nationally Determined Contributions of the states

The Nationally Determined Contributions (NDCs), which represent the commitments of the states (of non-binding character) to the Paris Agreement, have been largely mentioned during COP23. Several speakers recalled the importance of involving the civil society in their elaboration and their adaptation into sector strategies.

Several examples were mentioned: in Senegal, the national committee for climate change involves different types of actors, including the civil society. In Niger, the national environment board for a sustainable development (Conseil National de l'Environnement pour un Développement Durable) also involves non-state actors ,who have participated in the elaboration of the NDCs[1].

[1] www.cnedd.ne/

❖ The role of local actors in adaptation to climate change

The role of regional and local authorities in adaptation to climate change was especially highlighted.

Several speakers stressed the need to support local authorities, which are at the forefront of local action but often don't have the institutional, financial or technical capacities to take action.

Photo: Side-event in the Unesco pavilion. Credit: pS-Eau

This raises the question of the existing support mechanisms. Among those ones, it has been pointed out that decentralised cooperation has a key role, as it allows to build direct institutional or technical partnerships between structures of similar nature and mobilises local actors in the long time. It has also often a levering effect to mobilise additional funding.

❖ Update of scientific knowledge on climate change

Researcher and scientists attending COP23 have warned about the urgency of tackling climate change. Recent scientific findings, which takes into account data from recent years confirm the conclusions of the latest IPCC report, which was published in 2013: even by considering the current and future states commitments to reduce their greenhouse gas emissions, an global increase of temperature is inevitable by the end of the century.

The graph below produced by the British Royal Society shows four projections of temperature evolutions in different scenarios of reduction of greenhouse gas emissions.

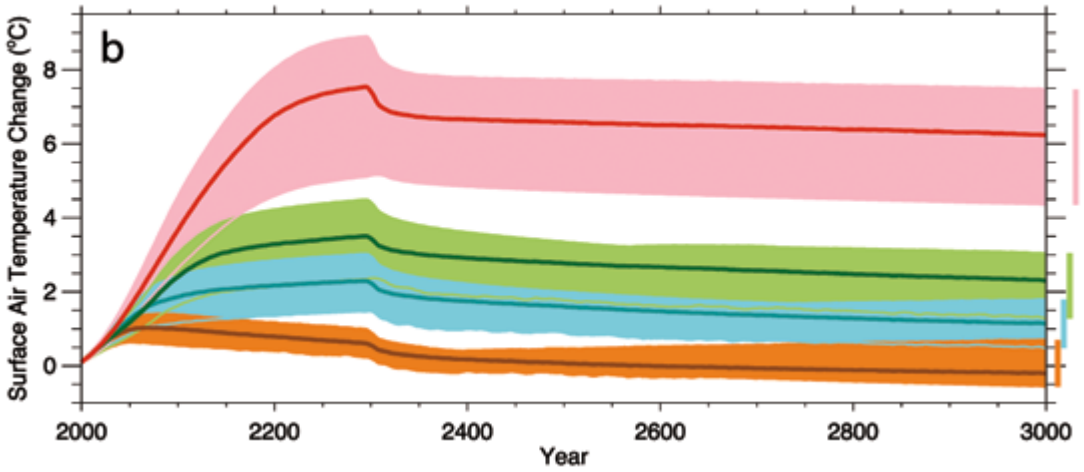

Figure 1 : Model projections show how surface air temperature would respond following a scenario of business-as-usual emissions ceasing in 2300 (red), a scenario of aggressive emission reductions, falling close to zero 50 years from now (orange), and two intermediate emissions scenarios (green and blue). The small downward tick in temperature at 2300 is caused by the elimination of emissions of short-lived greenhouse gases, including methane. Source: Climate Change Evidence & Causes, Royal Society (2017)

These findings show the urgency to take action now, not only to mitigate climate change, but also to adapt to the upcoming and inevitable changes. This is all the more important as CO_2 emissions from fossil fuel combustions and industries are expected to rise of 2% in 2017, after three consecutive years of stagnation[2].

Resources:

- *Climate change evidences and causes, Royal Society (2017): available online*
- *Climate updates, Royal Society (2017) – available online*

Water and climate related issues

Several sessions, whose main focus was on water and climate change, were organised by the civil society in the pavilion area of the Bonn zone or during the thematic water day, organised as part of the Marrakech partnership for global climate action.

❖ Access to climate finance for the water sector

One of the main issues raised by water actors is their access to climate funds. Speakers have highlighted the difficulties to prove the adaptation benefits of water projects, which is often less obvious than to justify mitigation activities. Therefore, more capacity building is required to make projects "bankable" and eligible to climate funds.

Water actors have stressed the need for a coherent multi-donors approach, based on states NDCs and national strategies, and which could take into account the different territorial dimensions (local/national scales, river basin dimensions, etc.).

❖ Monitoring systems and knowledge of water resources

Already discussed during the last COP22, the issue of the lack of knowledge of the water resources was mentioned in several sessions. These data, as well as information on use, discharges and withdrawals and on ecosystems, are critical for decision-making.

However the funding of the data collection systems required to produce these data remains difficult. In addition, the network coverage of hydrometric stations records an important decrease in Africa since the 80s. Therefore, the challenge lies in the reconstitution of the data system whilst integrating new technologies (connected transmission systems, satellite data, etc.). In this perspective, it is necessary to raise awareness on the importance of information and of data collection systems and their funding, in particular among politicians and decision-makers.

An example of observation system presented at COP23 was the SATH-ABN observatory of Niger basin. The Niger Basin Authority has indeed established a system for the monitoring of water resources and flow forecasting by satellite. This allow a better management of the

[2] http://www.globalcarbonproject.org/carbonbudget

resources as well as a fairer allocation of resources, whilst ensuring the sustainability of the aquatic ecosystems of the basin.

Resources:

- *Better knowledge for better management, Water, Climate and Development, French Water Partnership (2016), disponible en ligne*
- *Observatoire SATH-ABN (in French): www.sath.abn.ne/index.html*

❖ Nature-based solutions

Many sessions called to implement nature-based solutions in climate adaptation and mitigation. This concept refers to the "actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" (IUCN, 2016).

The declaration "Nature-based solutions for water management under climate change"[3] promoted by the French Water Partnership, the Global alliances for water and climate (GAfWaC) and the Marrakech Partnership was signed by more than hundred participants.

❖ Water-agriculture-energy nexus

The thematic day of the 10th November was the opportunity to highlight once again the interlinkages between water, energy and agriculture, since the three topics were on the agenda.

Several sessions illustrated the consequences of water scarcity or of polluted resources on agricultural productivity. When combined with land desertification and climate hazards (droughts, floods and extreme events), water issues pose major challenges for food security.

The Food and Agricultural Organisation (FAO), which announced that global hunger is on the rise again after steadily declining for over a decade[4], has clearly recognised the impacts of conflicts and climate change on malnutrition.

Resource:

- *WASAG (Global framework on water scarcity in agriculture), an initiative of the FAO: www.fao.org/land-water/overview/WASAG/en/*

[3] Read the declaration here: www.partenariat-francais-eau.fr/wp-content/uploads/2017/10/High-level-declaration_Nature-based-solutions_final_EN.pdf

[4] www.fao.org/news/story/fr/item/1037322/icode/

Focus on cities

The challenges of climate change in cities have been mentioned in numerous sessions. While the urbanisation phenomenon continues and that cities are responsible for more than 80% of the emission of greenhouse gases, they become increasingly vulnerable to climate hazards. In addition, more than 80 percent of the overall annual global costs of adaptation to climate change are estimated to be borne by cities[5].

❖ Disaster risk reduction and emergency interventions

The increase of extreme events in frequency and magnitude requires the implementation of disaster risk reduction plans. During a session on WASH and emergency, several NGOs expressed their concerns about the increase of emergency interventions linked to climate change in cities, and the specific and growing needs resulting from these events. Speakers insisted on the urgency to implement water security plans and to improve the cooperation between all stakeholders.

❖ Sponge cities

Several sessions focused on sponge cities. This notion refers to urban projects aiming to improve stormwater management thanks to nature-based solutions.

Using green infrastructures allows to better manage infiltrations, through rain water retention and drainage control. However, the implementation of such projects often face land tenure problems and need to be based on a mapping of flood accumulation and vulnerability areas.

Photo: Side-event « Sponge cities » in the German pavilion. Credit: pS-Eau

The projects can also include a planning which expands outside the city boundaries: for example, in Dominican Republic, the project "Vive El Yaque River" has created an ecological corridor which starts upstream of the city.

❖ Planning

Several difficulties in adaptation or mitigation to climate change in urban area is very much linked to planning.

[5] Climate Finance in the Urban context, Issues Brief #10, Nov 2010

CGLU Afrique launched at COP23 a new MOOC on planning for climate change in African cities. Currently available in English, it should be translated in French in the next months: www.coursera.org/learn/climate-change-africa

Focus on small island developing states

This year, COP23 was organised under the presidency of Fiji. This was an opportunity to bring to light the different impacts of climate change faced by those insular contexts. Representatives from small island developing states (SIDS) have highlighted the need to address the challenges of the migrations and to ensure a "dignified migration process".

Beyond the consequences of seal level rise, other problems such as saline intrusions or the weak availability of water resources lead to significant challenges for drinking water supply.

Focus on WASH services

Although the links between water and climate change are often more discussed from a water resources perspective, the impacts of climate change on water and sanitation services have been mentioned in several sessions, including a session organised by the pS-Eau (see the minutes on the next page).

Several sessions on cities have pointed out the necessity to ensure water security for their populations, by improving drinking water supply and by securing water sources. This was illustrated by an example from Ho Chi Minh City (Vietnam), where an ambitious project took place to reduce non-revenue water in the water supply network. In Dakar, different reflexions are ongoing to ensure water security for the city (desalination plant, water transfers, etc.)

Some speakers reminded that the discussions engaged on cities resilience should not make us forget rural areas, where a major part of the population is still living. Improving water security in rural areas also contributes to avoid rural exodus.

PARTICIPATION OF THE PS-EAU

The pS-Eau attended COP23 in order to bring forward the theme of WASH services in the climate agenda. This participation follows pS-Eau work on this topic since 2015. This in-depth work conducted by a working group has studied and detailed the different impacts of climate change on WASH services.

New publication

During COP23, pS-Eau published a new leaflet on "WASH services and climate change".

This document gives a synthesis of the different impacts of climate change on water and sanitation services and share some reflexions on the solutions that should be implemented to adapt to these consequences.

>> download the leaflet in English or in French

The working document at the base of the publication of this summary can also be downloaded at this page.

Side-event "WASH services and climate change", pS-Eau

The pS-Eau organised a session in the Fijian pavilion on the 9th November 2017. Three panellists presented concrete examples to illustrate the impacts of climate change on water or sanitation services in Ethiopia, Martinique and Senegal and their adaptation solutions.

❖ Developing a national climate resilient strategies for health in Ethiopia, by Sally Edwards (technical officer, climate change and health at WHO-AFRO)

Ethiopia, with support from WHO through a DFID-funded project, has developed a national framework for adaptation to climate change in the health and WASH sectors since 2015.

This process, which led to the definition of a national strategy and the review of sector policy documents, has been supported by several mechanisms:

- A strong coordination within the health and wash sectors through two working groups: an expert group on climate resilient water safety plans and a technical group on national climate change and health;
- A national assessment on vulnerability and adaptation for the health sector, which allowed to the generation of evidence on the impacts of climate change: research was conducted in order to identify vulnerable zones and key issues, with a primary focus on malaria and diarrhoea. Regarding the WASH sector, vulnerability and adaptation assessments on the water resources themselves were done as well:

research was conducted on groundwater quality and availability, as well as for surface water, and maps were developed.

- Capacity building activities at a national scale: 700 staff both from the WASH sector and the health sector were trained over three years during workshops at sub-regional levels

The different policy strategies and guidelines developed included a strategy on climate resilient national health systems and health national adaptation plans. Regarding WASH activities, the climate resilient water safety strategic framework developed guidelines for both the rural and urban environments and was implemented through pilot projects.

Conclusion and lessons learned:

- Partnerships between and within government, development partners and agencies were key to avoid duplication. Evidence generation at country level and country-capacity building were also key for helping the wash sector to address climate change in a positive manner.
- Development and implementation of policies, strategic framework and guidance at a national level helped to strengthen the processes at subnational level. In addition to put climate change on the health and on the wash agendas, it enabled them to work together in coordination. It is extremely critical to continue the advocacy for cross-sector coordination and partnership for resilience and WASH.
- This project played a critical role in the provision of financial technical resources for addressing climate resilience in health and wash – so not only did it talk about the policies but because the pilot worked, many went in to actually implementing what had been said, showing good practices within the country. Over 60 districts today have included climate resilient water safety plans into their WASH programmes, showing the success of the pilot at national level.

❖ Adaptation of a treatment technology in tropical insular context, Martinique, by Aline Populo (International cooperation officer at Office de l'Eau de la Martinique)

Located in the French West Indies, Martinique faces several challenges regarding sanitation and mostly regarding the treatment of wastewater (only 80% of wastewater collected in the treatment stations is actually treated). In addition, the insular and tropical context of Martinique leads to specific challenges for sanitation: the management of hydraulic overloads during rainy events, biological extra-activity problems due to the variability of temperatures, land pressure and construction constraints due to the topography, deterioration of infrastructures due to saline sea air, etc.

To meet these challenges, the Attentive sanitation project has experimented the adaptation of a pilot vertical flow constructed wetland system to the context of Martinique. This treatment system developed by the French National Institute for Research in Science and Technology for the Environment and Agriculture (IRSTEA) since the late 1990s, has been implemented in several location of the French West Indies, including Guadeloupe, La Réunion, Martinique and Mayotte.

The planted constructed wetland is a robust and economic solution as the treatment is based on a passive mechanical process, requiring little energy and staff to operate. One challenge of the implementation of a pilot treatment plant was the choice of adapted plants. In the French West Indies, the reeds, which are the most commonly used plants for constructed wetlands, have been replaced by local species (Heliconia psittacorum or "bird of paradise" and Cyperus alternofolius or "false papyrus") with appropriate characteristics, following different tests.

In climate change adaptation terms, this system reduces the vulnerability of wastewater treatments to climate change. It has indeed a greater resilience to natural events and catastrophes thanks to the resistance of the plants. The use of reeds or local plants avoids the dysfunction of biological treatment processes, thanks to their good capacity of dealing with hydraulic overloads or variability of temperatures. Odour nuisances and health risks due to a greater production of gas under high temperatures are limited with this system. The system consumes also less energy than French conventional treatment plant.

So far, the results of the first pilot stations are encouraging: good treatment performances, especially regarding nitrogen. It also generates little sludge (one extraction every 15 years), compared to other methods. The only constraint is that it takes lots of space – which is difficult in an island context. This experiment received the Grand Prize for Environmental Engineering from the French Ministry of Environment.

❖ Review of several case-studies to ensure water security in Senegal, by Abdoulaye Sene (president of the preparatory committee for the organization of the World Water Forum « Dakar 2021»)

Water security is central to climate change resilience. In Senegal, water and sanitation services are increasingly vulnerable to climate change: services are facing issues such as water shortages, water quality problems, floods, etc.

Senegal has taken a strong commitment to build climate change adaptation through its National Determined Contributions (CDN) and the elaboration of sectoral plans for water security as well as climate resilient strategies.

Several ambitious actions are underway or have been defined at a local level, such as the artificial replenishment of aquifers, water transfers and the building of desalinisation plants.

For example:

- The transfer system of Notto Ndiosmone Palmarin is operating to deliver water for more than 250,000 persons, in coastal areas that are suffering from the intrusion of saline water. The transfer is 200km long.
- An ongoing project is studying the possibility to reuse wastewater from the wastewater treatment station of Dakar for agriculture. The benefit of wastewater reuse would be the saving of drinking water currently used for irrigation, in an urban and coastal zone, already suffering from availability and quality problems of the water resources.
- Other studies of water transfer are ongoing, for example to secure water delivery from the Lake of Guiers to the population of Dakar and of other villages located in the coastal area.

- Senegal is also trying to develop alternatives resources to ensure water security, with the construction of an important desalination plant for Dakar. This station would produce 100,000 m^3/d, providing a strategic complement to the existing water supply system, which gets most of its water from the Lake of Guiers.
- More generally, Senegal is committed to improve wastewater treatment nationally, in order to reach targets 2 and 3 of SDG 6.

Several reflexions are also ongoing about the elaboration of a national adaptation plan: this will be further discussed in the next months and could be a central topic during the 9th World Water Forum which will take place in Dakar. For this global forum, Senegal is planning to launch an initiative to accelerate the implementation of SDG6, as well as some initiatives for rural development.

❖ Questions & answers

Which coordination between Unicef and WHO programmes in Ethiopia?

- *Sally Edwards*: coordination is important in order to avoid that different partners make different things in the same areas. In Ethiopia, WHO and Unicef have carried on joint water and safety plan training but otherwise the two organisations have a different mandate.

Photo: Aline Populo, Abdoulaye Sene and Sally Edwards during the side-event in the Fijian pavilion. Credit: pS-Eau

How do the different financial supports from WHO shared on a programme such as the Ethiopian one? Does WHO offer some support for the development of projects that are bankable to climate funding?

- *Sally Edwards*: at WHO, funds from the "Protecting the human environment" department mostly come from climate funds. Funds dedicated to fighting malaria, which depends on another department, are distinct. However the two departments work occasionally on joint programmes. Regarding access to climate funds, WHO can support the States in the development of their propositions. However, they still have to go through the formal selection process.

What are the impacts of salinity on drinking water services in Martinique?

- *Aline Populo*: as Martinique is an island, the saline sea breeze is saline corrodes the material and the equipment. However, until now there hasn't been any problems of saline intrusion of groundwater, since Martinique drinking water comes mostly from surface water. It represents indeed 96% of water withdrawals, on the contrary to other small islands such as St Martin, which need to use desalination due to their lack of

alternative resources. However, Martinique has recently faced several droughts, which show the need to diversify the sources for water. Adaptation strategies and water security plans would then consider groundwater as well.

In Senegal, on the different projects presented, what do you think are the most interesting in terms of energy consumption?

- *Abdoulaye Sene*: this is a difficult question, because energy costs have changed a lot in the last recent years. In addition to hydropower stations on the river Senegal and the river Gambia, Senegal has also the possibility of become a gas producer. Perspectives are therefore open and changing, and tendency is good for energy costs. However, it is not only a question of costs, but also of water security. That is why Senegal is currently building a desalination plant, in order to diversify the sources of water supply. This new plant will use solar energy for part of its activities.

❖ Conclusion, by Colette Génevaux (project officer at pS-Eau)

Numerous examples show that climate change threatens the sustainability of WASH services. These impacts worsen the xrisks of the existing challenges linked to the demographic growth and to the already existing problems (lack of access to water and sanitation, natural pollutions of water resources, etc.). It is therefore necessary to act at all levels: at the national level, the implementation of adaptation strategies and climate resilient policies can provide a framework for action in the territories. At a more local level, pilot experimentations can allow to scale-up adaptation or mitigation initiatives.

The different experiences presented in the side-event highlight the importance of the knowledge of the water resources and of the systems as well as of their monitoring in the elaboration of sector policy, in decision-making and in order to adapt technologies.

Partnerships are also crucial for climate change adaptation, at an international level but also within sectors. The 9th World Water Forum in Dakar in 2021 will aim to support those process, and will allow to place African contexts at the centre of the reflexions for adaptation to climate change.

Side-event "The critical role of water, sanitation and hygiene in climate change adaptation" WaterAid

As part of the alliance on WASH, climate and health, pS-Eau attented WaterAid presentation, who is also a member of the alliance.

This session highlighted the different challenges of adaptation and mitigation for climate resilience in WASH. In particular, the session discussed:

- The need to better collaborate between climate actors and WASH actors. This is all the more necessary when ministries for water and for the environment are different.

- The lack of technical and institutional capacity remains a barrier to the implementation and sustainability of projects
- Climate actors should recognize that water challenges, especially those related to water and sanitation services are crucial in the adaptation to climate change. It should be acknowledged that WASH activities are coherent with climate resilient strategies.

Resource:

- *A video of WaterAid Burkina Faso: www.youtube.com/watch?v=R9BB0XdRxEA*