



Geneva Water Hub

May 2019

Round Table Report

The role of large dams in transboundary water negotiations

This report, prepared by the Geneva Water Hub, documents the discussions held during the round table “The role of large dams in transboundary water negotiations”. It reflects the main take-away messages resulting from the exchanges among the participants and finally ends with a set of take away lessons.

This event took place in Geneva on 16 May 2019 organized by the Geneva Water Hub, a specialized Center from the University of Geneva (UNIGE) that focuses on hydropolitics, peace and security. It aimed at identifying the main issues, impacts and gaps and define pathways for recommendations to foster cooperation between different actors from policy to practice. It brought together 32 participants involved in the topic above, from government, the diplomatic community, international organizations, international NGOs, think-tanks and the academia.

As a Center of excellence specialized in hydropolitics and hydrodiplomacy, the Geneva Water Hub aims to better understand and contribute to the prevention of water-related tensions by considering conflicts of use between public and private sectors, between political entities and States. It is committed as the Secretariat of the “Global High-Level Panel on Water and Peace” to promote and contribute to the implementation of the recommendations of the Panel Report, released in September 2017.

The Geneva Water Hub is developing a hydropolitical agenda to better manage water conflicts and promote water as an instrument of peace with the support of the Swiss Development Cooperation (SDC) and the University of Geneva.

For more information, please contact the Geneva Water Hub at contact@genevawaterhub.org and visit our website: www.genevawaterhub.org

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At the heart of:

Blue Peace

Abstract

In the context of climate change and global population increase, water demands are changing, and large dam construction experiences a renaissance worldwide, especially in developing countries. Damming a river upstream is an opportunity for energy production and agriculture development but it can create conflicts between sectors and often political unrest if the waters are shared between countries.

The roundtable discussed the state-of-the-art practices in transboundary dam construction, reservoir filling and management by means of existing case-studies, taking in account legal and political frameworks, operational solutions and cooperation opportunities.

The objective was to identify the main problems, impacts and gaps and foster cooperation between different actors from policy to practice. Its purpose is to advance the knowledge regarding large dam construction, reservoir management negotiations and to define tracks for recommendations at the policy level. The Geneva Water Hub aims to build a strong global network and an exchange platform related to these topics.

Résumé

Dans le contexte du changement climatique et de l'augmentation de la population mondiale, la demande en eau évolue et la construction de grands barrages connaît une renaissance mondiale, en particulier dans les pays en développement. Endiguer une rivière en amont représente une opportunité pour la production d'énergie et pour le développement de l'agriculture. Cela peut toutefois également susciter des conflits entre secteurs d'activité et de potentiels troubles politiques si les eaux sont partagées entre Etats riverains.

Cette table ronde a permis d'examiner les plus récentes pratiques en matière de construction, de remplissage et de gestion de barrages transfrontaliers. Pour ce faire, les participant-e-s ont analysé différentes études de cas, ils/elles ont exploré les cadres juridique et politique existants, ils/elles ont discuté les solutions opérationnelles et les possibilités de coopération.

Ce faisant, l'objectif de cette table ronde a été de faire progresser l'état des connaissances concernant la construction de grands barrages, concernant les négociations portant sur la gestion des réservoirs et de définir des pistes de recommandations politiques. Le Geneva Water Hub a pour objectif de contribuer à l'établissement d'un réseau mondial et d'une plateforme d'échange sur ces sujets.

Disclaimer

The people who participated in this round table took part in their personal capacity as experts. The contents of this report do not necessarily reflect the views and policies of the organizations or states to which they are affiliated or have been affiliated in the past. The opinions expressed in this document do not imply any position as to the legal status of the countries, territories, municipalities or areas, their authorities, or the delimitation of their boundaries. The Geneva Water Hub as organizer of the event has produced in this report a summary of these exchanges does not necessarily represent his opinion as an organization. We regret any error or omission that may have been introduced without our knowledge in this document.

Cover photo credits: Glen Canyon Dam – Lake Powel (Arizona, United-States) John Gibbons, from unsplash.com

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1. Introduction

Challenges related to the role of large dams in transboundary water negotiations are impossible to grasp during a one-day roundtable discussion. However, this first event allows to set the scene, raise significant questions and challenges and identify possible pathways to move forward. Upfront the discussion, participants were asked for some thoughts related to the topic answering the following questions:

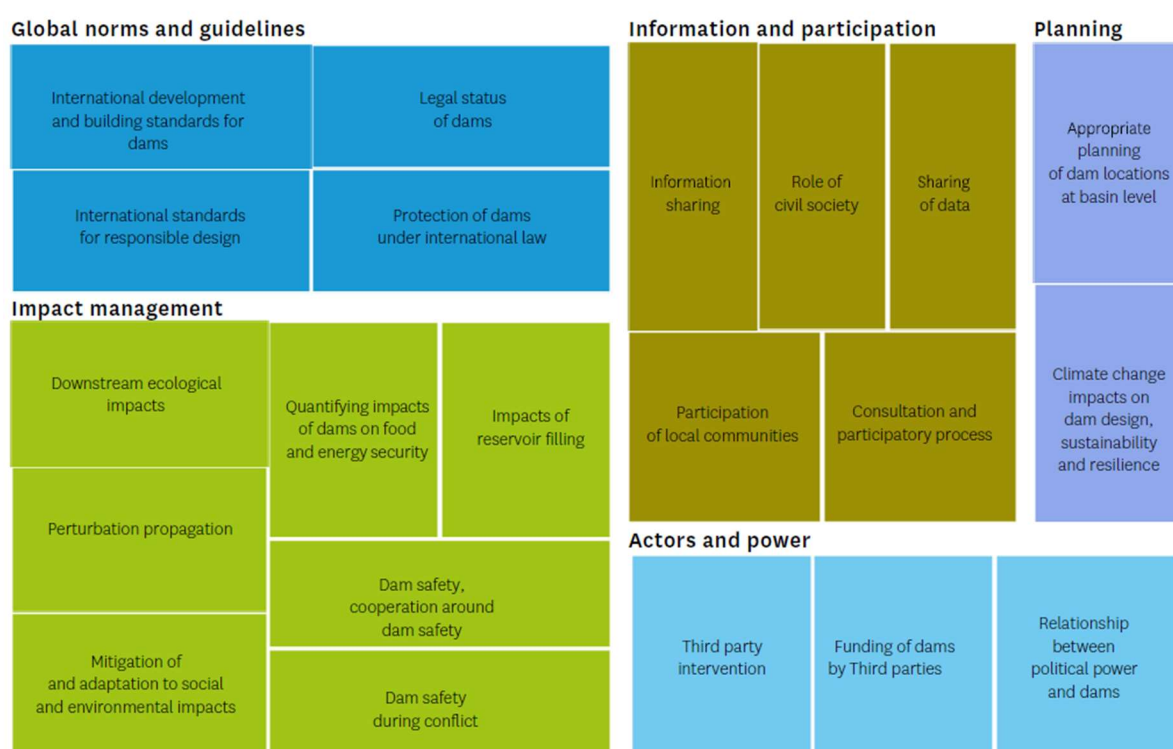
- *What are the areas in which transboundary dam cooperation needs to be strengthened?*
- *What issues do you think are the most sensitive?*

The diversity of answers shows the magnitude of challenges with five main areas of concerns a) global norms and guidelines, b) impact management, c) information and participation, d) planning, e) actors and power (see figure 1).

In order to structure the discussion, the round table has been articulated around three sessions entitled (1) “On transboundary dams, a global vision”, (2) “Dam construction and management: legal tools and instruments”, (3) “Reservoir management: benefits, risks and prospects” introduced by three selected speakers.

The report reflects on discussions of the day, it raises take away lessons, identifies pending questions and proposes possible further actions.

Figure 1. Areas of interest of actors attending the roundtable

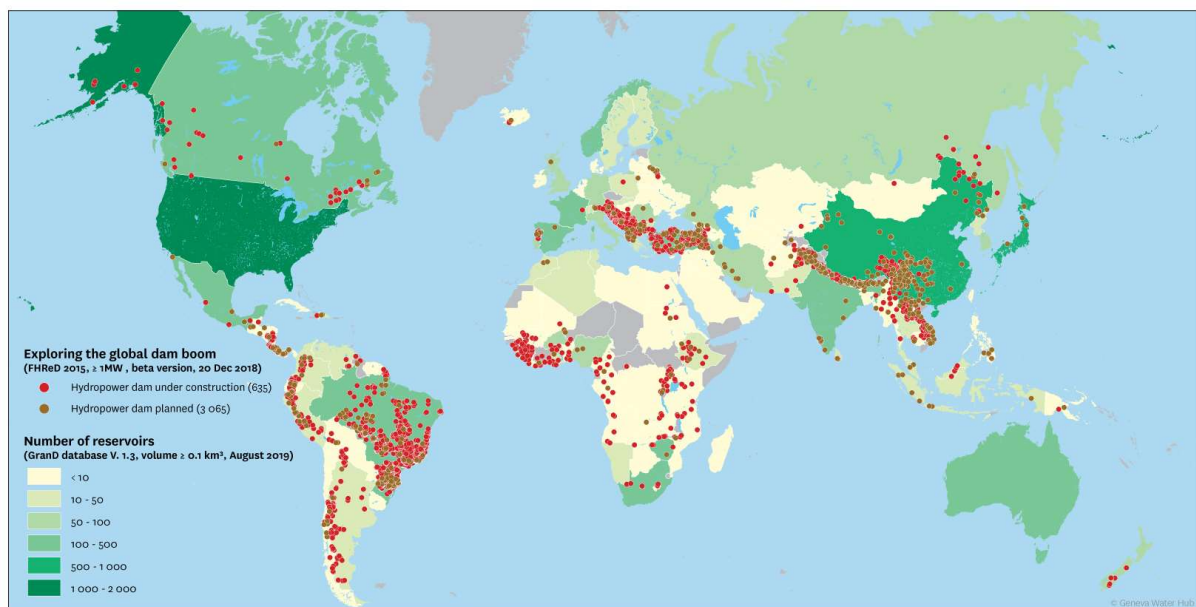


2. On transboundary dams, a global vision

The first session presented the economic and environmental implications related to dam's construction and operation. It touched upon a number of highly pertinent examples and focused on specific method and modelling tools developed to assess trade-offs, benefits and costs accompanying their developments.

Julien Harou from Future Dams explained the potential that new dams have in contributing towards the accomplishment of the Sustainable Development Goals (SDGs). The dam building boom started anew in 2015, mostly in developing countries including several ones in Africa, China, South America and Eastern Europe (see Figure 2). There exist 60.000 dams worldwide, with more than 3.700 currently planned or under construction. Such dams offer multi-purpose solutions for developing countries' growth schemes and policies.

Figure 2. A global boom in dam construction (Grand and FHReD databases, modified)



In every new dam construction, decisions have to be made regarding the site selection, reservoir size, filling and operation conditions. Dam planning is a long process that sometimes ends with no construction at all, as interests, financial or site conditions are not met.

Mr. Harou presented a new computer-based methodology for collaborative design and management of dams. The system simulates the effects of a new dam/dam-scheme in a river basin and searches for the most efficient portfolios of proposed interventions using an optimisation algorithm with pre-defined optimisation objectives (e.g. energy production, fish habitat, biodiversity...)

The methodology allows for a broad analysis of resilience versus costs. The advantage of this approach is that it allows interactive collaboration between different stakeholders, as it can be displayed online and modified rapidly. The users can define the metrics, test scenarios, add filters, evaluate trade-offs, deliberate on options in real time and take result-based decisions. This methodology allows to create a global vision and tracks benefits and costs over space and time. However, this type of analysis implies a long process of scenario discussing and negotiation; for example, the East England project linking Energy-Environment-Agriculture used 200 factors of performance and the negotiations took 5 years to reach an agreement. Other problems encountered are the regional and the multi-sector distribution of benefits.

A number of dams are located on transboundary rivers (e.g. Ethiopia or Ghana) and they irrevocably create controversies, if not actual tensions, on various sides of the borders. Perceived threats exist at every stage of the process of large dam building. However, there is also potential for cooperation on a wide range of dimensions, namely on costs sharing or hydropower sharing beyond joint water management and allocations.

The Grand Ethiopian Renaissance Dam (GERD) is one such example. It represents a valuable potential for development in Ethiopia who is funding this expensive infrastructure, while at the same time, creates tensions

downstream as the reservoir captures a significant portion of the Nile's flow. Several filling strategies can be considered in a negotiation (e.g. Downstream water releases at a fix rate, as a proportion of the natural flow, defining a minimum volume or as a function of the stock in reservoirs downstream...). Empirical results show that a fix, static rule benefits mainly to Ethiopia (in term of revenue from power production, in net present value), while an adaptive rule mitigates impacts to Egypt and Soudan.

The dam planned by the Democratic Republic of Congo on the Kouilou-Niari river basin is another example where interests of various stakeholders concerned or impacted by the dam, clash. Simulations of scenarios facilitated by advanced computer capabilities may support negotiation on the selection of a combination of smaller dams (instead of one large dam). Experience shows that several criteria (e.g. protection of indigenous communities, river flow, fish resource, hydropower...) need to be considered to reach an agreement between stakeholders on the preferred trade-off between the cost and the resilience of new infrastructure.

Technical and scientific tools are key to support diplomatic and sound negotiation processes. This session presented the added-value of using simulation and optimization tools based on an iterative search algorithm that generates a range of non-dominated points known as Pareto-optimal solutions. The tool nurtures collaboration among stakeholders in data sharing and analysis with the aim of producing matrix of performance related to dam planning.

Example 1 : Mega dam on Congo River to produce hydropower

“Trade-offs between river fragmentation and forest fragmentation in the Kouilou-Niari river basin”

Currently, less than half of people in the Republic of Congo have access to electricity, including less than 5 percent of people in rural areas. Natural gas plants comprise the largest installed capacity (350 MW, nearly 60 percent of national total), followed by hydropower (209 MW, 34 percent). The government of the Republic of Congo seeks to meet rising demand for electricity and views the Kouilou-Niari basin, which currently is undammed, as a potential development area for hydropower.

A Business as Usual (BaU) scenario for future development was derived from government documents, which currently envision a single purpose hydropower dam on the mainstream of the river. Alternative options were explored (other locations or combinations of dams) for developing hydropower with similar generation and investment costs as the BaU, but with potentially lower environmental costs (i.e., Hydropower by Design ‘HbD’ strategy proposed by the Nature Conservancy and partners).

To examine potential alternatives to the BaU option, an inventory of 13 potential dam sites across the basin were considered with a range of installed capacity. Alternative options and combinations were evaluated and compared using a river basin simulation model linked to an automated search algorithm to quantify each option \$ metrics for river connectivity and forest fragmentation. The dam in the BaU option is generating more energy (nearly 4,000 GW hours per year) than any other single dam in the inventory.

Thus, all HbD scenarios required more than one dam to have at least comparable levels of power generation. The proposed dam using BaU is the most downstream dam among all potential dams in the basin and, therefore, all alternative options performed better in terms of connectivity for migratory fish.

Conversely, the BaU dam is relatively close to the existing transmission grid and so all alternative options required more transmission lines, which can fragment forests and negatively impact wildlife, including great apes that live in the basin. The best performing multiple dam scenario had almost four times greater river connectivity, but almost three times greater length of transmission lines, for similar levels of generation and investment cost.

This illustrates a clear trade-off between one large dam on a mainstream (with greater river fragmentation but lower forest fragmentation) versus two or more smaller dams upstream in the watershed (with less river fragmentation but more forest fragmentation)¹.

¹ Adapted from Opperman, J., J. Hartmann, J. Raepple, H. Angarita, P. Beames. E. Chapin, R. Geressu, G. Grill, J. Harou, A. Hurford, D. Kammen, R. Kelman, E. Martin, T. Martins, R. Peters, C. Rogéliz, and R. Shirley. 2017. The Power of Rivers: A Business Case. The Nature Conservancy: Washington, D.C.

Example 2 : Blue Nile River Basin - GERD Grand Ethiopian Renaissance Dam

The Blue Nile has large potential for hydropower with identified sites in Ethiopia that could generate up to 40 TWh per year. Although potential sites were identified in the 1960's and hydropower dams have been built on the Blue Nile in Sudan, until recently little development has occurred in the Ethiopian reach of the Blue Nile.

Regulation of the river by reservoirs in the Ethiopian part of the Blue Nile basin could potentially reduce impacts from floods in Sudan, improve hydraulic productivity by reducing sediment transfer and enhance low flows. However, downstream countries are concerned that the filling of the GERD reservoir will negatively impact water availability (e.g., for irrigation) and performance of downstream hydropower reservoirs in Sudan and Egypt.

The environmental and downstream economic impacts of proposed Blue Nile dams and their financial costs and benefits will depend on the size, sequence of implementation and operating policies of the reservoirs. Hence, an analysis of investment options (sequence, design and operation of dams) and trade-offs involved in these choices could inform this discussion and potentially identify development options that stakeholders find acceptable.

Six dams on the Blue Nile are proposed. This case study examines the mixes of benefits attainable if two, three or four of these were implemented. Only a maximum of four reservoirs can be implemented among the six identified, because some of the reservoirs will inundate the dam sites of others.

HbD options offered a range of improvements for environmental flows or to the downstream flow during reservoir filling, for similar generation, compared to the BaU option. Flows during reservoir filling are an important consideration for downstream irrigation and for addressing concerns of downstream riparian countries².

2.1 Take away lessons

Benefits and costs of transboundary dams as well as trade-offs between them, should be assessed and tracked (over time and space) to facilitate negotiations between concerned parties.

To this end, policy making may be helped by scientific research that combine scenario simulations and by processes ensuring stakeholders' participation and the collection of a great diversity of knowledge. Research and data collection are indeed key to support negotiation processes and help tip the balance away from potential conflicts towards cooperation potential.

2.2 Questions for future action

1. What are the available methods for investigating the need, the best location and capacity of a future dam? Strengths, limitations and applicability.
2. What is the recipe to make policy makers listen to, understand, accept and engage in the use of science given their political calendar and agenda?

3. Dam construction and management: Legal tools and instruments

Mr Alejandro Iza from IUCN started this session by highlighting the fact that legal issues related to dams are rich and complex. A wide variety of legal rules apply to dams. Added to these, there is a second layer of water related rules and a third layer of rules meant to organize and regulate transboundary relationships between sovereign states on each side of a given dam.

Based on a quote of the World Commission on Dams, according to which, dams have made a significant contribution in relation to human development, he highlighted the role of law in this context: dams provide multiple benefits (hydropower, water supply, flood control, water storage, irrigation, navigation, recreation...); and the role of law is to ponder all such benefits and related costs (e.g. loss of river connectivity with the sea, displacement of communities, impacts on aquatic biodiversity, among others). Legal tools have to give the

² Ibid.

necessary framework to achieve an acceptable balance among the various interests of those who may benefit from, or be impacted by, a given dam.

When dams are built in a transboundary setting, they may exacerbate tensions between upstream and downstream countries. This extra level of complexity is addressed by the law, although imperfectly. At least 39% of water agreements adopted during the 20th century relate to the hydropower production: this topic is a major driver of diplomacy and negotiation. That being said, large infrastructures need to be managed once built and experience shows that river basin organizations remain maintained even in situation of conflict (e.g. in Zimbabwe).

Indeed, international legal tools of binding character do exist and apply to such situations. They can be summarized as follows:

Table 1. Main global conventions related to transboundary dams

1992 Convention <i>Convention on the Protection and Use of Transboundary Watercourses and International Lakes</i>	1997 Convention <i>Convention on the Law of the Non-navigational Uses of International Watercourses</i>	ILO Convention No. 169 <i>Indigenous and Tribal Peoples Convention</i>
Reflects the general principles applying to the use of international water courses i.e.: equitable and reasonable use, no significant harm and obligation to cooperate.	Reflects the general principles applying to the use of international watercourses i.e.: equitable and reasonable use, no significant harm and obligation to cooperate.	Creates an obligation for governments to respect the special importance of cultures and spiritual values of the peoples concerned of their relationship with the lands or territories, or both as applicable, which they occupy or otherwise use, and in particular the collective aspects of this relationship.
Is less stringent than the 1997 Convention in terms of notification obligations and procedures.	Addresses the issues of « planned measures » by creating obligations for the States e.g. notification, consultation and negotiation etc...	Pays special attention to the displacement of local communities and the impact that transboundary dams and their maintenance can have on them.
Creates obligations for countries to prevent, control and reduce the adverse significant transboundary impacts.	Create obligations of protection, preservation and management: protection of ecosystems as well as duties of maintenance and protection of installations	Creates obligations for the States to negotiate with indigenous and tribal people, with a view of the conclusion of agreements, protection of the environment, notification of planned measures.

The global conventions related to water, i.e. the New York Convention of 1977, the Helsinki Convention of 1992, the ILO Indigenous and Tribal Peoples Convention, of 1989 (No. 169).

Multilateral or bilateral legal texts such as the SADC revised water protocol, the Itaipu Treaty, the Treaty of Yacyretâ, the Treaty of Salto Grande, the Agreement on the Syr Darya Basin.

National level: from a national perspective, laws that apply on a dam building depend on the type of country in question i.e. unitary v/s federation. And depending on the case, different layers of legislations may apply. In a federation for example, building a dam may be subject to different set of rules depending on the nature of the river the dam is built on. Beyond legal texts, at the national level, a number of issues can and should be considered for a sound dam project implementation such as transparency, participation, national economy.

In addition to international agreements (relatively easy to draft but not complete) and national laws (relatively more complete but more complex), there is a set of international instruments (binding and non-binding texts) bearing an impact on dam building. These are corporate policies, such as the UN Global compact, the World

Bank regulations, World Commission on Dams (as a multilateral guidelines and recommendations), IUCN resolutions (WCC-2012 Resolution 89), among others. Yet, it is worth mentioning that while agreements are binding only on States that have ratified or acceded to them, customary laws such as the principle of equitable and reasonable use or the no significant harm rule bind all States. It should be noted that the compliance with international norms may be more effective if international standards and guidelines are part of the financial conditionalities.

In another vein, it has been raised that, as a matter of international affairs, transboundary infrastructures are one of the components of the negotiation package (which may include, e.g., trade or migration policy). Furthermore, several issues (including financial feasibility, technical capacity, capacity to enforce the law) are not legal ones but should be considered alongside the diplomatic dialogue and economic cooperation.

3.1 Take away lessons

The construction and management of dams are not regulated by one single legal instrument. They are guided by a set of binding and non-binding standards, norms, principles, guidelines, recommendations and customary rules. They provide a starting point and good guidance for negotiation processes.

In the face of current and future environmental pressures (e.g. climate change) it is urgent to further develop specific guidance to coherently inform the stages of dams' planning, building and monitoring.

Recent dams' failures highlight the importance of data collection and data exchanges as well as the development of warning systems and procedures.

Diplomacy and public participation are key during the planning process to establish a good balance between various actors' interests and level the playing field among them.

3.2 Questions for future action

1. How can international laws be implemented in a more effective way to dam planning, construction and maintenance?
2. How to stimulate private sector actors to comply with international laws and standards everywhere on the globe and not only where they are closely "watched"?

4. Reservoir management: Benefits, risks and prospects

Ms. Naho Mirumachi, from King's College London started this session by reflecting on the major issues and contestations that pop-up after a dam is built, filled-up and made operational, and these are:

- Timing of downstream consumptive use (including irrigation and agricultural planning as well as urban development).
- The management of other dams (Hydropower generation and power pool regulation).
- Ecological impacts (conservation efforts and human health implications).

In order to understand and address these critical issues raised late in dam construction and operation processes, the political context of dam management should be considered and assessed through the following lenses:

- **Power relations.** These are very fluid and change over time. For example, in the case of the Rogun dam, Tajikistan, they have been used in various arenas, respectively, hard (economic) power and soft power, to convince its counterparts to achieve its objectives regionally and nationally. Power relationships are indeed resilient to international factors as well as national politics.
- **Political economy of the dam.** This aspect is well illustrated by the example of the Mekong Xayabury dam in Laos. The project was seen as a major engineering milestone. Looking at the political economy of the dam, the need for more hydroelectric power, more interconnectivity in the region, as well as better regional development, modernization and economic progress were obvious arguments. Throughout the project implementation, governments managed trade-offs at the regional level.

However, the key question is to identify the real beneficiaries of such a project. As a matter of fact, the real trade-offs and monetary benefits are distinct of those of the investors. In order for one to understand this aspect of the political economy of a dam, one should look at the sub-national level. Furthermore, despite the governments' official arguments presenting a dam as key for the regional development, the building of such large infrastructure is a political affair and alternative options are often hidden away, if not totally ignored.

- ***Existing institutional arrangements of the basin:*** Once a dam is built and operational, a pending issue is to know what rules will apply to its operation and functioning and how potential (if not real) conflicts should be mitigated. The first pertinent matter to look into is the reason that brought the project of the dam: does it have a historical root, is it a colonial dam, was it set-up by a basin commission, is it a hydro-hegemonic action? This rational cannot be boiled down to a simple issue of conflict management over the dam but instead regarded as a factor of conflict transformation through the involvement of new actors, as well as a way of re-scaling issues and harm at stake. It finally takes a new mindset to achieve efficient cooperation around an existing dam. The infrastructure has to be understood and addressed as an object impacting transboundary and national settings, both in the political and environmental dimensions: ultimately, changes in hydrological regime by dams come with important social consequences.

4.1 Take away lessons

Dam projects, selections and constructions have definitively political aspects of importance and may sometimes ignore viable alternatives.

Building, operating and maintaining a dam, as well as its decommission when security or purpose is not met, all have transboundary/international and national dimensions.

Tension management of dam disputes should be factored by implications of actual conflict transformation. Basically, not only the biophysical processes but also the social processes need to be integrated into the equations. The involvement of new actors and re-scaling of damages and impacts is a prerequisite to a holistic analysis of issues related to the infrastructure.

Finally, dam projects should be considered in a wider institutional setting by focusing on historical perspectives, rules of water allocation, existing and evolving institutional governance architectures in the basin.

4.2 Questions for future action

1. How can we handle the symbolism of large dams (as political object used to build a national identity) in international negotiations?
2. How can States address alternatives to dams when the official purpose of a project can be perceived by other riparian states as achievable through other means?

The issue of trust among stakeholders at all levels (sub-national, national, regional and international) was brought up as a key ingredient for any kind of cooperation. It is key at the planning and the building phase, as much as during the operation or the decommission stage of a dam.

Annex 1: List of Participants

Title	Name	Surname	Organisation
Mrs.	Andrea	Aeby	Federal Department of Foreign Affairs -Permanent Mission of Switzerland to the UN Offices
Mr.	Hisham	Bekhit	Cairo University - Department of Irrigation and Hydraulics
Mrs.	Nadia	Benani	Swiss Agency for Development and Cooperation-EDA
Mr.	Christophe	Brachet	International Office for Water
Mr.	Christian	Bréthaut	Geneva Water Hub
Mrs.	Natascha	Carmi	Geneva Water Hub
Mr.	Mario	Franca	IHE - Delft Institute for Water Education
Mr.	Jorge	Gastelumendi	The Nature Conservancy
Mr.	Johan	Gély	SDC - Swiss Agency for Development and Cooperation
Mrs.	Maria	Güell i Pons	Geneva Water Hub
Mr.	Julien	Harou	Future Dams- University of Manchester
Mr.	Alejandro	Iza	IUCN - International Union for Conservation of Nature
Mrs.	Aysegul	Kibaroglu	MEF University, Istanbul- Department of Political Science and International Relationships
Mr.	Rémy	Kinna	UNECE Water Convention
Mrs.	Birgit	Kuba	World Bank Inspection Panel
Mr.	Denis	Lanzanova	Geneva Water Hub
Mr.	Jan	Mattson	World Bank Inspection Panel
Mrs.	Naho	Mirumachi	Kings College - Geography and the environment Policy and society
Mrs.	Jasmina	Moussa	Egypt Permanent Mission in Geneva
Mr.	François	Münger	Geneva Water Hub
Mr.	Fabien	Nathan	EDF-CIH
Mr.	Madiodio	Niasse	Land-water and environment expert MNI Consultants
Mr.	Jakob	Petersen-Perlman	University of Arizona-Water Resources Research Center
Mrs.	Hannah	Plotnykova	UNECE Water Convention
Mr.	Peter	Pyke	South African Comity on Large Dams
Mrs.	Lena	Salame	Geneva Water Hub
Mrs.	Susanne	Schmeier	IHE - Delft Institute for Water Education
Mrs.	Mara	Tignino	Geneva Water Hub
Mrs.	Laura	Turley	University of Geneva
Mr.	Kevin	Wheeler	University of Oxford-Environmental Change Institute



**UNIVERSITÉ
DE GENÈVE**

The role of large dams in transboundary water negotiations

Thursday, 16th of May 2019

World Meteorological Organization (WMO)

7 bis Avenue de la Paix, 2nd Floor, Kruzel Hall

1211 Geneva - Switzerland

Meeting objective

In the context of climate change and global population increase, water demands are changing, and large dam construction experiences a renaissance worldwide, especially in developing countries. Damming a river upstream is an opportunity for energy production and agriculture development but it can create conflicts between sectors and often political unrest if the waters are shared between countries.

The roundtable will discuss state-of-the-art practices in transboundary dam construction, reservoir filling and management. We will explore existing case-studies, discuss about legal and political frameworks, operational solutions and cooperation opportunities. Three selected speakers will address the aforementioned questions in 30 minutes presentations, after which we will open up the space for an exchange and discussion.

The objective of the round table is to identify the main problems, impacts and gaps and foster cooperation between different actors from policy to practice. Its purpose is to advance the knowledge regarding large dam construction, reservoir management negotiations and to define tracks for recommendations at the policy level. Furthermore, this meeting is an opportunity to build a strong global network and an exchange platform related to these topics.

Who are we?

The Geneva Water Hub is a knowledge centre focusing on hydropolitics, based at the University of Geneva. It acts as the secretariat of the Global High-Level Panel on Water and Peace. Its main mission is to bring together knowledge and practice to develop the hydropolitical agenda to help prevent water conflicts at transboundary level and to promote water as an instrument of peace and cooperation.

Agenda

The agenda of the meeting is structured around three sessions:

9.00-9.30 Welcome of the participants and coffee

09.30-10.30 Introduction and scope of the meeting : François Münger, Director of the Geneva Water Hub and Prof. Christian Bréthaut, Scientific director Geneva Water Hub

10.30-12.00 Session 1: Transboundary Dams: A Global Vision

Facilitator: Prof. Christian Bréthaut - Scientific Director of Geneva Water Hub, Institute for Environmental Sciences, University of Geneva

10.30-11.00: **Prof. Julien Harou** (Future Dams) *"New collaborative approaches for large transboundary dams: negotiating trade-offs and planning despite uncertainties"*

11.00-11.15: Q&A

11.15-12.00: moderated round table discussion

12.00-13.30 Lunch break

13.30-15.00 Session 2: Dam construction and management: Legal Tools and Instruments

Facilitator: Dr. Mara Tignino, Reader, Faculty of Law and Institute for Environmental Sciences, Geneva Water Hub's Platform for International Water Law, University of Geneva

13.30-14.00: **Dr. Alejandro Iza** (IUCN) *"Legal instruments and mechanisms to ensure the sustainable construction and management of dams"*

14.00-14.15: Q&A

14.15-15.00: moderated round table discussion

15.00-15.15 Break

15.15-16.45 Session 3: Reservoir management: Benefits, Risks and Prospects

Facilitator: Mrs. Natascha Carmi, Lead water specialist, Geneva Water Hub

15.15-15.45: **Dr. Naho Mirumachi** (King's College London)

"Full and fulfilled? Prospects of dam management in developing regions"

15.45-16.00: Q&A

16.00-16.45: moderated round table discussion

16.45-17.15 "Tour de Table" discussion (Facilitator: Mrs. Lena Salame, Strategic Coordinator UPWCD, Geneva Water Hub, Dr. Denis Lanzasova, Senior researcher, Geneva Water Hub)

17.15-18.00 Conclusion

18.00-19.00 Drinks

Logistics

- A valid identification document is required to enter the World Meteorological Organisation