

## TOPIC # 1 : Hydraulic infrastructures in West Africa: issues, stakes and perspectives in relation with economic development and regional integration

West Africa is less equipped with hydraulic infrastructures in the region than the other regions in Africa and in the world.

### ➤ What are the underlying problems/reasons for low level of development of these infrastructures in West Africa?

Overall, participants agree on the endogenous and exogenous factors that explain this poor development of such large infrastructures in West Africa:

#### - The financial factor:

It seems to be the number one factor. The high cost of large infrastructures to government finances in West African States is a real bottleneck. **(Pierrick Fraval, Mrs Konaré Rokia Diarra, Thiombiano L. Jérôme).**

The lack of alternatives to dams for undertaking the required economic activities such as electricity and agricultural production compels West African countries to make this expensive option **(Pierrick Fraval)**

Reimbursing the loans taken to build existing infrastructures is a headache because the economic return on investments has been far below expectations. **(Olivier Hamerlynck)**

#### - The historical and geopolitical factor:

West Africa has experienced a troubled 20<sup>th</sup> century when independence was acquired by countries following a long period of colonisation. It should be noted that these large projects were implemented based on a combination of conducive political and economic facts.

*This is what happened recently for Kandadji but cannot be easily replicated in Guinea, even though the country hosts the best sites in West Africa (deep valleys, low evaporation, potential management of the resource downstream). Moreover, the assessment criteria have been thoroughly modified in 2000 with the CMB report and the cessation and then resumption of international funding.*

**(Christophe BRACHET).**

*After the independence of countries: dam projects were the symbols of modernity and progress. But the absence of skills and financial resources has made the States request assistance from external donors. In the meanwhile, there was rapid staff turnover and change in policies and approaches. This and the non-transparent validation process of studies are the reasons why some projects fell in oblivion for about ten years until a positive environment is again created thereby enabling new studies to be conducted. An example is given by the Fomi process.* **(Pierrick Fraval)**

Also, river development and management policies are inadequate and poorly harmonised. **(Moriba NOMOKO-AMCFE)**

The evaluation of construction projects and inter-states negotiations, especially for transboundary infrastructures are time-consuming (case of Manantali), because each country tends to ensure that they get the maximum profit from the process. **(Mrs Konaré Rokia Diarra, Thiombiano L. Jérôme)**

The geopolitical situation in the basin: countries located downstream rivers can more easily build dams that will not affect other countries that are further downstream **(Pierrick Fraval)**

Country decision-makers are inadequately or not aware (until recently) of water resource-related stakes in the social and economic development of the sub region. **(Thiombiano L. Jérôme)**

#### - The social and economic factor

Inadequate planning of economic and social actions in support of the infrastructures constructed.



*The Talo Threshold the document of which was reviewed twice by the National Assembly of Mali illustrates this situation. The advocates of the dossier were endeavouring to give evidence of the positive impact of the Threshold while other people wanted to prove the contrary with each of the inconsistent study results. In such a case, the populations are trapped in-between the two spheres of influences. The threshold was nonetheless built. What is its impact? Post-implementation studies should be conducted, if they have not yet been. (Mrs Konaré Rokia Diarra, Programme Officer, UICN Mali)*

*The agriculture-based economy which is more dependent upon flood plains than other regions in the world produces major secondary and environmental effects that will be less compensated through the profits made out of the infrastructures. (Floris Deodatus)*

*Existing facilities are not optimally managed in a wider vision of the basin as a whole (Bart Goes)*

Disruption of social structures at the local, national and regional scale.

*The shift from rainfed agriculture to irrigated agriculture is scaring and farmers are not in a hurry to adhere to the new pattern. This requires a drastic change in social structures in entire regions while farmers are not sure to achieve positive results in the longer term. This may be the reason why some donors are reluctant to finance large dam projects which are by definition, irreversible. (Pierrick Fraval)*

- The natural factor

The terrain in West Africa is not really fit for such infrastructures. (Floris Deodatus)

Rivers have low hydrological production (Moriba NOMOKO-AMCFE)

Additional observations:

**Experience report in Asia:** a relatively rapid development by the private sector (contribution with technical expertise and financial scheme) requires that institutions in charge of ensuring the fulfilment of obligations play a strong role in the same way as the State which should arbitrate to make sure for instance, that the local development component is not left aside. Is this possible in Africa? (François Obein)

#### **Positive view of the under-development of infrastructures: quest for alternatives**

West Africa is lucky enough not to have large dams: she should take advantage of this situation to develop a different approach to river management and energy production. Conventional irrigated plots have shown their limits and constraints everywhere and it is high time to turn to a different approach which would be cheaper in terms of pumps, energy and heavy infrastructures. (Georges GREPIN)

- What is the course of scientific and technical knowledge about them in West Africa ?

In certain cases, knowledge is inadequate due to lack of (hydrological, ecological and social) follow-up.

*This often makes the discussion emotional as it is based on personal perceptions and not on hydrological records. (Bart Goes)*

*One can manage what one can understand and without reliable data, this is just impossible. (Olivier Hamerlynck)*

In other cases, the knowledge does exist, but it is not taken into consideration by decision-makers: *Knowledge on water management, infrastructure building and economic and ecological effects exists, but is not really shared and recognised by decision-makers. (Floris Deodatus, Thiombiano L. Jérôme)*

Or, knowledge exists but is not shared and remains sector-based. It remains inaccessible for users: *Capacities do exist but they are general highly sectoral without any exchange among disciplines and sectors that are yet indispensable for sound design and management of these infrastructures.* **(Olivier Hamerlynck)**

*The level of scientific knowledge is low and when data exists, it is not accessible for users.* **(Moriba NOMOKO-AMCFE)**

This situation ultimately creates a knowledge gap on the side of stakeholders involved in dam projects.

*Complexity of the issue: sound knowledge in engineering and environmental sciences is required for participating in this kind of debate. At this level, «the pro-dam lobby »is always ahead of the others. There is a long way to go in the areas of research, extension and public information.* **(Peter Torrekens)**

➤ According to you, what are the needs and the objectives to reach in this domain ?

This question was not extensively answered and it reveals two fairly general viewpoints.

- The demands are so significant that sustainable use of the rivers cannot be ensured  
*The needs are great in such a way that the integrity of the rivers is today threatened.* **(Moriba NOMOKO-AMCFE)**

- The need to guarantee agricultural and energy production  
*The review of the Strategic Action Plans (SAP) of most West Africa Basin Organisations (NBA, OMVS, VBA ...) reveals that countries are basically concerned with two issues : food self-sufficiency and energy independence.* **(BALIMA Amadou)**

➤ Did the existing dams in West Africa (Kainji in Nigeria, Manantali in Mali, Akosombo in Ghana, etc.) reach their objectives ?

It is interesting to see the answers to this question that show divergent opinions concerning the agricultural and energy objectives of the dams.

*The agricultural objectives were not reached in Senegal* **(Georges GREPIN, Pierrick Fraval)**

*Manantali is far from achieving its objectives, especially in the area of hydro-agricultural development and energy production.* **(Moriba NOMOKO-AMCFE)**

*Manantali dam: the Manantali dam serves 3 countries (Senegal, Mali and Mauritania). It has a two-fold vocation (hydroelectric and hydro-agricultural).*

*Obviously, the energy produced does not meet the needs of the countries involved as shown by the energy supply problems experienced by these countries. However, the construction of the so-called second generation infrastructure (Felou) will considerably fill the gap according to experts, enabling the countries to make progress towards energy objectives. According to the experts, this station will tremendously contribute to increasing the capacity of the dam.* **(Mrs Konaré Rokia Diarra)**

*Energy production objectives were attained unlike agricultural production objectives.* **(Floris Deodatus)**

*Akossombo : in terms of national objectives, we may consider that they have been achieved in the area of hydroelectricity, navigation and fisheries and apparently not in the area of food security.* **(Thiombiano L. Jérôme)**



*The electric energy demand is very high in West African countries and existing thermal stations and hydraulic dams cannot respond to this demand. (Fabrice DOSSOU-KAGO)*

Some people believe that the objectives have been reached (even though some of the objectives were revisited) given that large hydraulic infrastructures have contributed to the development of the region (despite adverse environmental and social impacts):

*Of course, many impacts were unfortunately under-assessed (health-related impacts in Diama), maintenance is difficult to provide (Kainji turbines), the level of the resource has declined (Akosombo) and displaced persons are not always well treated, but overall, I think that large regional infrastructures have widely contributed to the development of West Africa. (Christophe BRACHET)*  
*Manantali was built on the basis of voluntary cooperation among the three States (Mali, Senegal and Mauritania): even though there are still components to be implemented, one can say that initial objectives are in the process of being achieved in the best interest of member States of the organisation. (Thiombiano L. Jérôme)*

*Akossombo: it should be noted that for the past few years, the neighbouring countries are already benefiting or are looking forward to benefiting from the development opportunities offered by the dam within the framework of mutually beneficial cooperation among the States. (Thiombiano L. Jérôme)*

*If the Diama and Manantali dams had not been constructed in spite of the strong opposition to such integrative projects, the potential offered today to the Malians, Senegalese and Mauriticians would have just remained a dream. (Massamba Diene)*

A divergence in viewpoints was highlighted on the fact that certain projects tend to overestimate the benefits while underestimating the costs and risks in order to make fundraising much easier. (Bart Goes and Olivier Hamerlynck)

Here is an example of how to achieve optimum management of the Manantali dam so as to achieve initial objectives:

*To optimize the management of the Manantali dam and achieve the objectives, IRD has defined an optimized flood support system that enables farming in recession periods while reducing to the extent possible, the impact of this activity on energy production in Manantali. The various findings are being used by OMVS since 2001 to manage the dam.*

*Still on applied research, the IRD DIVHA unit also expressed interest in the use of seasonal meteorological forecasts for the management of Manantali, and in the modulation of flood support according to the stock available. (Mme Konaré Rokia Diarra, Georges GREPIN)*

Finally, striking the balance between benefits and disadvantages of large infrastructures is still a challenge : can we take into consideration only the economic output of the project (energy and agricultural outputs) and forget about the inherent negative impacts ?...

*Concerning Manantali, we have witnessed a gradual shift in the main objective of the dam because of the unavoidable inclusion of external factors that were initially underestimated or barely known. This change was particularly translated into a programme aimed at optimising the multiple uses which ultimately led to the modification of the dam management rules initially determined. (Pierrick Fraval)*

*It is advisable to make an assessment of each dam at both macro-economic and local levels, given that benefits are basically intended for urban populations whereas the negative impacts are rather felt at the local level, among users and riparian populations. (Jean-Marc Garreau)*

➤ Did they contribute to reinforce the regional cooperation and integration, or, on the contrary, did they generate conflicts ?

Large infrastructures are generally two-faced in the sense that they have both advantages and disadvantages. They are cooperation tools and conflict sources at the same time:

They serve as cooperation tools among States through basin organisations and through the exchange, forum, charter platforms that such organisations provide ...

*They have contributed to strengthening cooperation at certain levels hence leading to the establishment of NBA and OMVS. (Floris Deodatus)*

*Through OMVS, sub regional cooperation and integration are being built up. In this dynamics, it is important to put emphasis on inter community exchanges with the involvement of civil society organisations of the respective countries sharing the rivers. Moriba NOMOKO-AMCFE*

*The Manantali dam has undoubtedly contributed to strengthening cooperation among States. OMVS has strengthened this cooperation through the River Senegal Water Charter which was ratified by the countries. Experts from member countries meet on a regular basis to evaluate the projects, the quality and quantity of water, etc. (Mrs Konaré Rokia Diarra)*

*Manantali which was built in a context of shared management of transboundary water resources, contributes to the strengthening of cooperation among member states; Though it was constructed in a different context and because of cooperation mechanisms among basin member states, Akossombo will contribute in the future to strengthening cooperation among basin member states. (Thiombiano L. Jérôme)*

*A large panel of the Yobe Basin stakeholders in Northern Nigeria come together in a forum and I think that this could not have been implemented in the absence of dams and significant reductions in surface water bodies upstream. It goes without saying that there are upstream-downstream tensions in this forum but at least the discussion is a bit more structured. (Bart Goes)*

- Cooperation tools indeed, yet cooperation is long overdue

*The issue of shared (transboundary) water resources development is a thousand times more complicated than managing national water course facilities. A concrete example is given by the Niger basin. How many years after the inception of the Niger Basin Commission and then NBA, did they finally resolve to create a shared vision for concerted and sustainable development of the basin. Policy-makers are the ones accountable for this situation: visions were lacking, the gap between national and regional interests has long been exacerbated, and benefit-- and cost-sharing was not on their agenda. (Ousmane S. DIALLO)*

- Sources of conflict

*They have created conflicts. For instance, there are tensions among Guinea, Mali and Niger about the use of upstream water resources. It is feared that someday, River Niger will no longer be able to supply Niamey with water. (Floris Deodatus)*

*Conflicts are more perceptible among people than at State level. States always have institutions (ECOWAS, OMVS) that make it sure to rapidly contain any conflicts.*