

TOPIC #4 : Opportunities for hydraulic and energetic resources development

➤ Does West Africa have alternatives to large dams ?

- No, there are no alternative in the Sahel zone.

The functions that large dams are supposed to fulfil do not have many genuine and satisfactory alternatives, particularly in the Sahel zone. (GARBA RADJI)

- Yes, there are alternatives

As for me, West Africa has sufficient alternatives to large dams (Expédit AGO)

- The production of electric energy using solar energy could be a serious alternative to the construction of large hydroelectric dams in West Africa (very hot sun in the Sahel region):

In concrete terms, there are currently initiatives based on this alternative: Morocco, Ethiopia, Rwanda... (BALIMA Amadou)

- What about alternatives to irrigation? Is irrigation the rationale behind large dams ? For food security, large dams and irrigation are not the solution.

If people take half of the money invested in irrigation and put it in rain fed agriculture, West Africa would be self-sufficient. (Bruno Barbier)

Small or large scale irrigation? Fomi is justified because it could better feed the Office du Niger. But small scale irrigation, the one that uses drilling from wells, low lands alongside rivers or during recession, is more efficient in terms of water use. (Bruno Barbier)

No infrastructure in the sub region that was built to ensure food security plays this role despite the existing irrigation potential. (Jean Bosco Bazié)

- The issue of alternatives should be discussed in a specific manner: reasoning on a case- by-case basis.

One should reason in terms of benefits and costs of such or such dam and consider its alternatives and more importantly, the accompanying measures. For example, a dam like Fomi in the upper basin of Niger is in principle necessary so as to expand irrigated surface areas at the Office du Niger (and mostly for dry season farming which is poorly developed so far) and increase hydroelectricity production which is lacking in Guinea. (Pierrick Fraval)

➤ Are they the answer, or do we need rather to be thinking about smaller structures and more integrated watershed management?

One viewpoint is that large dams play an indispensable role because of climate change:

- Large dams as a solution to climate change

Rain fed crops are extremely vulnerable to climate change to which we have no choice but adapting: large dams are a great form of adaptation to climate change. (GARBA RADJI)

The general trend is however to chose a winning combination of both large and small dams. Small infrastructures should not be neglected ...

- There is an issue of arbitration in terms of financial resources allocation (government and donor budgets) between big ad hoc investments (large dams, hydroelectric infrastructures, irrigated plots) and a miscellaneous set of complementary measures to improve rain fed agricultural production:

The construction of large dams in West Africa should not be undertaken at the expense of (technical and financial) support to small infrastructures, watershed management with the implementation of soil conservation and restoration techniques, improvement (in general) of rain fed agriculture given that this is where the potential lies for increasing agricultural production in the sub region as a whole.
(Pierrick Fraval)

- Small infrastructures and family smallholds should be promoted.

This is in my opinion, the first step towards the green revolution so much promoted by politicians without anything concrete. **(Expédit AGO)**

- There is a risk related to hydropower in large reservoirs: decrease in the water level during hot season and drought periods and increased demand (air condition...)

Low cost hydropower is welcome for a sub continent that is faced with chronic « energy shortage» but large dams do not prevent electricity shortages in years of drought nor do they eliminate the need to invest in (classical) complementary infrastructures and specifically in innovative alternative systems. In addition, externalities will increasingly be a burden (no evidence of the profitability and sustainability of irrigated farming, heavy environmental and social impacts ...). **(Peter Torrekens)**
Big thermal plants should therefore be provided for to offset the decrease in the rate of dam turbines.
(Bruno Barbier)

It is preferable to build hydropower dams in zones where rainfall is adequate than in zones where water evaporates like in the Sahel. **(Bruno Barbier)**

Energy deficits are increasing. Power shedding is still recurrent in African countries in dry season.
(DOSSOU KAGO Fabrice)

- Integrated management should be further developed

In building large infrastructures, people seldom « think out of the box ». Radical alternatives are automatically seen as being unrealistic or even ridiculous. Yet, the state of the global environment is such that an integrated approach and consideration of sustainability of development are a growing imperative. **(Peter Torrekens)**

It would be more beneficial to develop at the same time as large dams, small infrastructures, micro-dams by enhancing IWRM mostly to hope for management and replicability by producers or by their professional associations at the level of our villages, communes and departments. **(Expédit AGO)**

- Irrigated crops cannot alone solve the food problem

Irrigation alone cannot solve the food problem in sub saharan Africa. A combination of both dry and irrigated crops is needed. **(Hervé OUEDRAOGO)**

It is better to produce where it rains than painfully taking water to plots in the middle of the sahel.
(Bruno Barbier)

Let us start by supporting the long standing rain fed agriculture in plains and shallow lands as well with water resources accessible at low cost; let us start by re-establishing the productive function at the level of family farms, the first production unit that will someday join other farms to form a strong block; let us start by improving production techniques and yields at this level and achieve food security outreaching men and women in their land. **(Jean Bosco Bazié)**

- **Have the necessary efforts been done to promote other solutions in order to achieve similar objectives as dams ones ?**

Participants answered 'no' categorically, saying that the required efforts were not made:

- Concerning energy sources, renewable energy is not being adequately explored.

How many countries in West Africa are aware of the wind energy potential? **(Expédit AGO)**

- Irrigation is a costly solution; alternatives exist to feed the population but are not explored. *The margin for improving and scaling up rain fed farming and livestock rearing is still wide. The problem is that alternatives are often little explored, poorly guided and seldom researched.* **(Peter Torrekens)**

Nobody is talking about developing the West African sudan-guinean zones which are sparsely populated and cultivated for environmental reasons and yet, several tons of maize per hectare can be produced there without any problem provided producers get access to inputs. **(Bruno Barbier)**
Rain fed crops can be consumed in different ways and the cost of their processing can also be reduced. Millet based couscous is highly appreciated. Why do we make so little efforts in this area? **(Bruno Barbier)**

- No, radical alternatives are automatically taken as being unrealistic or even ridiculous. *The public debate is generally opened when large dam options have already been implemented but key questions are never asked.* **(Peter Torrekens)**

This questions has highlighted divergent viewpoints on the use of sudan-guinean zones : on the one hand, a proposal was made to develop this land (grassy savannah) for maize production, and on the other hand, the risk of excessive deforestation was mentioned ...

A very meaningful question that can lead to another debate was asked: *Is there any real West African agricultural policy?* **(Peter Torrekens)**

➤ Which ways remain to explore ? How could it be encourage ?

Irrigation and drinking water

- Include ground water

Two documents were shared on the high increase in ground water resources and the use that could be made of such resources for domestic and irrigation purposes. The quality of water was specifically dealt with. **(Philippe Roudier)**

Energy

Other renewable energy sources should be tapped: solar, wind, biogas

- Solar energy for domestic uses and environmental protection

Efforts should be made to further use solar energy for domestic needs, public needs and areas so that hydroelectric energy can be made available for the jobs and wealth creating industry. **(Jean Bosco Bazié)**

With the international enthusiasm for solar energy, I am wondering whether Africa should not put part of her eggs in this basket in the future... **(Peter Torrekens)**

The use of solar panels will not only increase energy but also protect and safeguard the environment in these days when the whole world is facing a global warming issue. The Regional Solar Energy Programme was implemented in the nine member countries of CILSS from 1990 to 1998 and the second phase was planned to start in 2009. **(BALIMA Amadou)**

- Wind energy is a renewable, sustainable and clean source of energy that is effective in terms of mitigating the negative impacts of climate change.

The system was tested at small scale in Senegal where wind energy-driven pumps are produced in Thiès at a level that can allow meeting the needs of other countries also. **(BALIMA Amadou)**

- Research on alternatives should be promoted



Countries should allocate adequate funds to universities and other research centres. (Expédit AGO)
Many African agronomists working on rain fed crops are complaining about the lack of resources (according to IFPRI, resources allocated to individual researchers has decreased by half over the past decades) (Bruno Barbier)

Other options should be made for more sustainable and environment-friendly energy sources and water supply systems. (Etiosa Uyigue)

The diversification of production sources will make it possible to have energy in abundance. (DOSSOU KAGO Fabrice)

- To promote energy/hydro-agricultural micro-dams

Micro-dam and renewable energy programme promoters should be given subsidies, tax exemptions and their technical, organisational and financial capacity should be built. (Expédit AGO)

A general viewpoint is that the solutions are complementary rather than alternative solutions: the various types of energy should not be opposed to each other when referring to alternatives. *Each of them has its own advantages and disadvantages and their costs in financial terms and their mitigation of adverse effects vary over time and according to technological progress. Hydro-electric energy remains one of the accessible sources that our current economies can afford.*

(Sébastien DOHOU)

The issue of being complementary and not alternative should be raised. (Pierrick Fraval)

I will not talk about alternatives but complementarity. (Jean Bosco Bazié)

It is important to support renewable energy sources of low amplitude but can be used everywhere, especially in rural areas to complement and not replace the heavy hydro-electric infrastructures designed for cities. (Pierrick Fraval)

A number of energy sources are widely complementary, each of them having its benefits and disadvantages. (Nicolas FORNAGE)

The issue of large dams is not necessarily raised in terms of alternatives. We should instead refer to complementarity. (GARBA RADJI)

A clear cut opinion highlights a real false debate around alternatives to large dams. The solution to the problems is not found in alternatives but in the sound management of dams.

To conclude, if there are alternatives, these should be built on sound management of large dams and not their phasing out! Sound management at the policy, institutional, environmental and social levels.... (GARBA RADJI)