

# **ENVIRONMENTAL FLOWS: LEGAL POSSIBILITIES IN BRAZIL**

Luciano Meneses Cardoso da Silva, National Water Agency, Brasília, Brazil

Dhalton Luiz Tosetto Ventura, National Water Agency, Brasília, Brazil

## **ABSTRACT**

This paper discusses the legal possibilities for environmental flows implementation in Brazil. Since the promulgation of the National Water Resources Policy – NWRP, in 1997, the continental waters have been treated basically as a resource, that is, an anthropocentric and utility good. For example, the NWRP doesn't regard the management of water for ecosystems protection, but only to human supply (drink water, industry, irrigation, mining, electricity, etc.). At the same time, the NWRP determines that the water resources management must be integrated with environmental management, which is based upon the National Environmental Policy, promulgated in 1981. Recently, some ways to integrate these policies have been studied. This paper concludes that the most promising way is the agreement about environmental flows among decision makers from both policies. This agreement would take place in the Water Resources Plans, one of the NWRP's instruments. This challenge requires a technical, legal and institutional endeavor which has no precedents in both policies. Based on the current legislation, this agreement probably becomes the only way to implement the environmental flows in Brazil and to aggregate ecological concerns to water resources policies.

## **WATER OR WATER RESOURCES?**

Environmental and water resources organizations in Brazil have problems about some legal definitions related to use of water and its protection. In fact, one of the reasons is in the dual meaning between water and water resources. Both expressions are presented in Brazilian's legislation.

## **THE FEDERAL CONSTITUTION OF 1988**

The Federal Constitution of 1988 brought an innovation when compared to former federal constitutions. This Constitution, for the first time, has written the expression "water resources" in addition to the expression "water". The expression "water resources" appears five times in the Federal Constitution, all of them associated to expressions like "use", "exploration" and "management". It can be deduced that when water is used to human purposes (economics goals), it must be called "water resources".

It seems true because the Federal Constitution determined a State, Legal and Institutional behavior based on water resources. After that, it was created the National Water Resources Policy (NWRP), the National Water Resources Management System and the National Council on Water Resources. Why? Have the legislators established specific rules when the water is used to human purposes or they have used those expressions as a synonym? The first hypothesis seems to be the correct one because the concept of "resource" comes from Economics.

According to Pompeu (2004), the water is a natural element without using commitment, being characterized as genus, whereas the water resource is the water as an economic good, with use possibilities, characterized as species.

The expressions “resources” and “exploration” associated to “water” in the legislation confirms the legislator’s intention to convert water in an economic good, reflecting the trend to manage only what is economically measurable.

## **REGARDING LAW N.º 9433 OF 1997**

The Law n.º 9433 of 1997, which created the NWRP, brought many times both the expressions “water” and “water resources”, causing some confusion to the reader and causing conflicts between environmental and water resources organizations. This law gives general rules to water resources organizations actuation, especially to the water rights granting procedures. Practically, this law has no environmental concerns. There is no priority to environment. The Article 1st determines that *when there is a shortage, priority in the use of water resources is given to human consumption and the watering of animals*. There aren’t rules to guarantee environmental flows in this law.

There is an exception in the Art. 15, that determine: *The water rights may be suspended (...) in the following circumstances: (...) IV - A need to prevent or reverse major environmental degradation*. But this exception is applied in a specific circumstance: major environmental degradation. It isn’t desired.

However, one of the NWRP’s guidelines, listed in Art. 3rd, is *the integration of water resources management with environmental management*. This way, the law recognizes that water resources management and the environment management belongs to different fields (systems) and must be integrated.

Based on the legislation, the NWRP of Brazil is anthropocentric, with economics interests. It is possible, then, to define “water resources” as the “water when submitted to economics interests of society”.

## **GLOBAL AGENDA FOR TWENTY-FIRST CENTURY**

The aims of the Global Agenda for 21st Century are related to environmental and development integration, as well as to guarantee water resources quality and quantity. The Agenda 21 determines:

*“Water is needed in all aspects of life. The general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and combating vectors of water-related diseases. Innovative technologies, including the improvement of indigenous technologies, are needed to fully utilize limited water resources and to safeguard those resources against pollution”.*

It can be noted that the sustainable aspects of Agenda 21 weren’t considered in Law n.º 9433 of 1997. Based on Global Agenda 21, we conclude that the expression “water” is better to show the environmental responsibility and it should be adopted by the Brazil’s NWRP and by the national water policy of other countries, as well.

## REGARDING ENVIRONMENTAL FLOWS

According to WaterCare (2008), environmental flows are natural flows or releases of water, intended to supply the environment's needs. But, in Brazil, there is not a consensus about it.

Indirectly, the water resources organizations in Brazil define the environmental flows through the water rights granting criteria. There are no environmental and scientific bases to establish those criteria. They are based on statistics of observed flows (reference flow with high frequencies of occurrence: Q90%, Q80%, etc.). Basically, it is permitted to take out water until a certain proportion of the reference flow. The main objective is to assure water to human purposes (industry, water supply, electricity, irrigation, etc.) with high guarantee/security. In fact, "environmental flows" are a rest, the remains of water.

The minimal flows to be maintained in the rivers must supply the multiple anthropocentric uses of water resources (current and future ones) and support the ecosystems' needs. The minimal flow to be maintained on the river must afford the consumptive and non-consumptive uses of water. The consumptive uses bring changes in the river's flows regime, because the amount of water extracted does not return to the river. In their turn, the non-consumptive uses, including the "ecological use", do not modify the natural flows. They include the necessary water for dilution of discharges (industries, urban areas).

Non-consumptive uses of water, like navigation and hydropower, aren't fighting with each other. In this case, it is enough to maintain the highest flow need between both. Then, the minimal flow must be, at least, equal to the sum of the consumptive uses and the highest flow need from non-consumptive uses, including the ecological flows.

In many cases, it is necessary to put maximum flow limits in shortage periods and put minimum flow limits during wet periods. Figure 1 shows a hypothetical example of these limits.

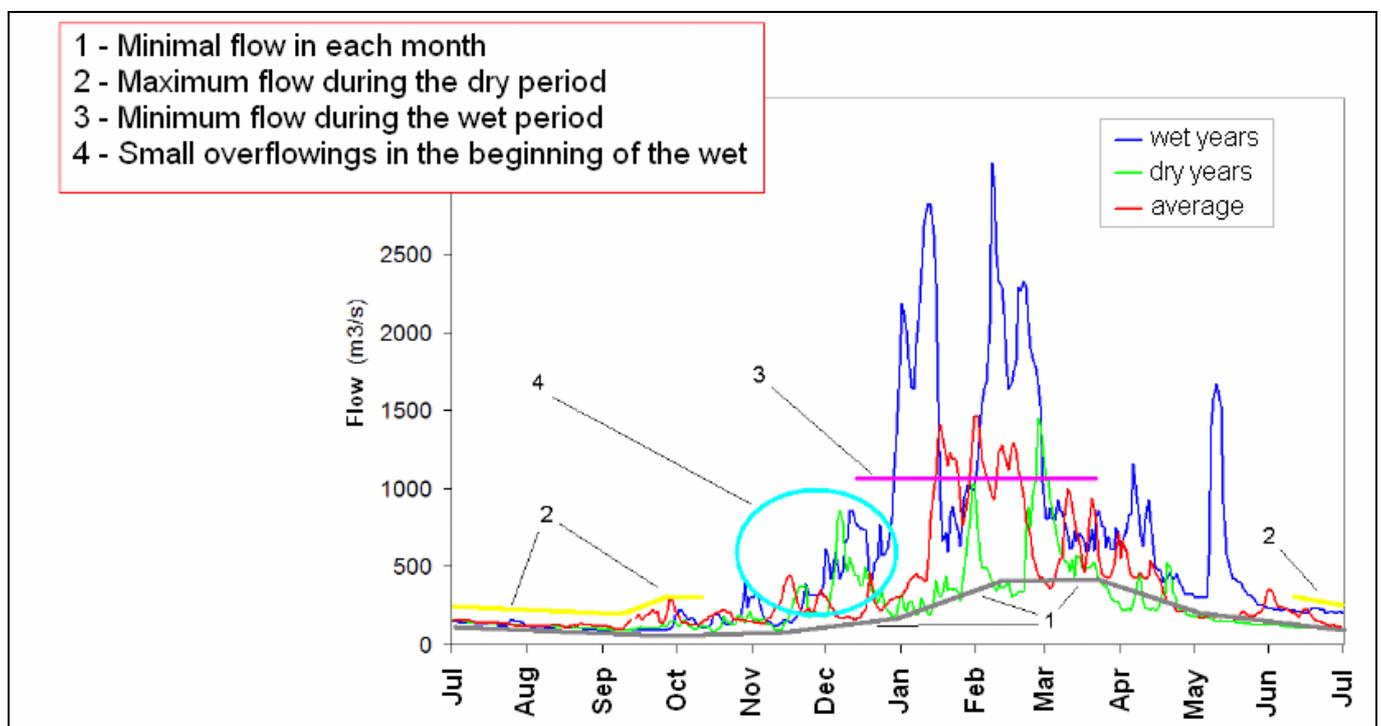


Figure 1. Flow needs of ecosystems along the year.

Source: Prof. Dr. Walter Collischonn presentation from IPH/UFRGS (CTAP/CNRH, July 2006)

Figure 2, drawn from Figure 1, shows a flow variation range during the year, for determined part of a hypothetical river. It can be applied to consumptive water rights and to define reservoirs operation rules. It means that, if the society<sup>1</sup> decides so, the right granting criteria to use of water resources should be totally modified in order not to neglect the minimum and maximum limits prescribed by the ecological hydrograph nor disrespecting the framing class. Therefore, it is observed a completely new view in the search of the water resources management integration.

Finding consensus about the ecological flows means, maybe, the main integration point between both policies, what will demand:

- Knowledge about the anthropical needs and their projections;
- Knowledge about the environmental needs, their vulnerability and interrelations with the anthropical uses;
- Evaluation, along with the society, about which would be the balance point in the tradeoff between economical benefits and environmental protection for the hydrographic basin;
- Participation of the environmental authorities in the water resources plans elaboration with the specific purpose of helping in the consensus about the ecological flows.

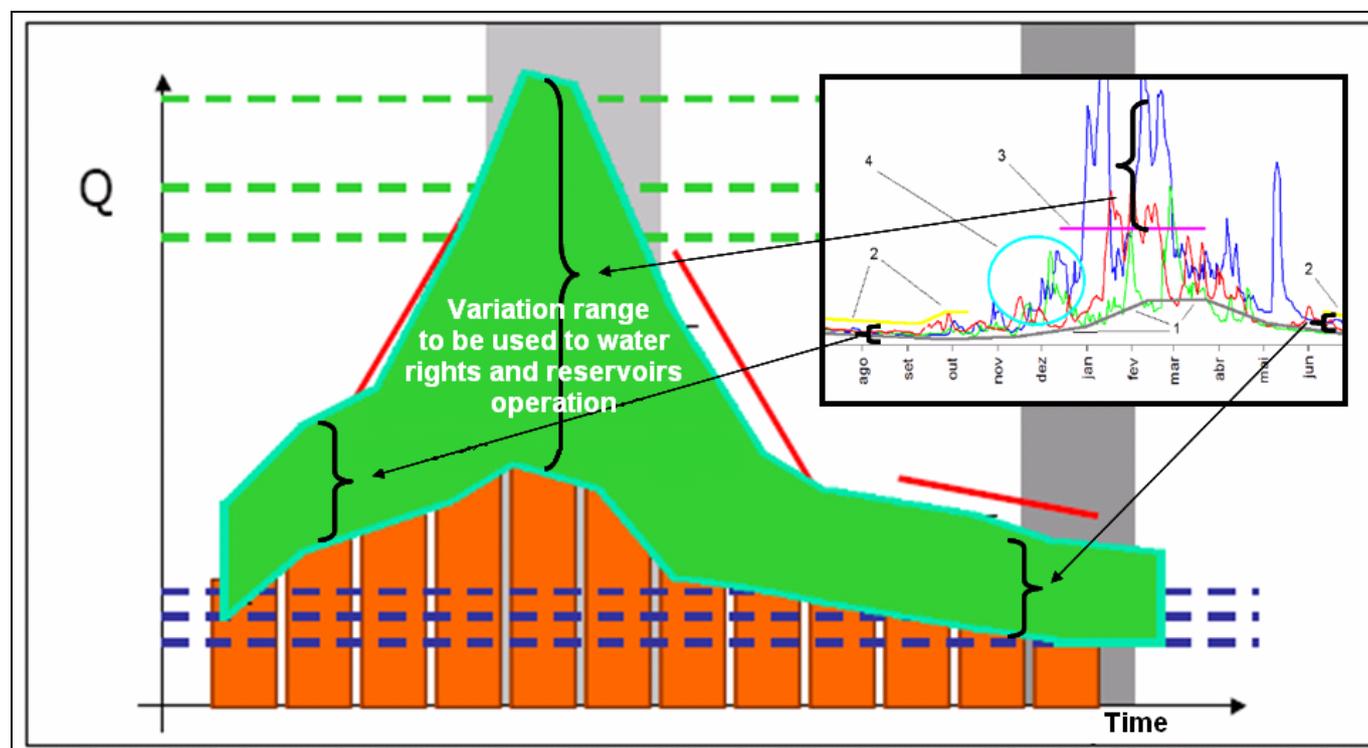


Figure 2. Prescription of "Ecological Hydrograph"

Source: Prof. Dr. Walter Collischonn presentation from IPH/UFRGS (CTAP/CNRH, July 2006)

It is observed that, in a certain way, the consensus about environmental flows represents a complement to the qualitative framing of water bodies in classes according to their preponderant uses (an instrument of NWRP). In fact, it can be considered as a quantitative framing of these water bodies.

<sup>1</sup> Society, here, can be understood as a water resources plan approved by the concerning basin committee, or even State

In other words, the quantitative framing represents the flows which must pass by the water body so that it can cope, simultaneously, with environmental requirements and water consumption anthropical needs, effluents dilution and hydraulic level maintenance, always respecting the qualitative framing. So, the environmental flow is the one necessary to guarantee the basin preservation in an integrated way, so that it can assure its sustainability taking into account the whole ecosystem and the anthropical activities.

About this subject, some points discussed during the 3<sup>rd</sup> World Water Forum, occurred in 2003 in Japan, are highlighted:

- Environmental flows are essential for the water ecosystems integrity;
- When defining the environmental flows, the aspects of quantity, quality and its variability in time must be considered;
- The environmental flows cannot be established in an isolated way, but in the context of hydrographic basin integrated management;
- When defining the environmental flows, the environmental, social (cultural inclusive) and economical questions must be considered;
- The “definition” of the environmental flows is basically a social question. The “determination” of the environmental flows is basically a scientific question;
- In the “definition” process, the society must be informed to make the best use of the science available.

It is also highlighted that the environmental flows must be seen in the context of the basins water resources integrated management. They will only assure the river integrity if they take part of a measures package such as: soil protection, pollution prevention and habitat restoring and protection.

## **REGARDING RESPONSIBILITY ABOUT ENVIRONMENTAL FLOWS**

Even though the granting authority adopts a concept and supports the methodologies development for environmental flows determination adapted to the Brazilian reality, there are legal questions which have not been answered yet:

- From whom is the legal competency to define the environmental flows? From water resources field or from environmental field? Or from both?
- Will the granting authority be responsible for defining these values, without further appeal, even though based on scientific methods for ecological flows determination?
- Or will the granting authority be responsible for the minimum flows establishment just enough for attending water resources multiple uses (irrigation, sanitation, shipping, effluents dilution)?
- Is it reasonable to suppose legal determination in order that the environmental field takes part of the Water Resources Plans elaboration (National, per State and per basin) with the purpose of helping in the environmental flows determination and definition?

These questions lead to the analysis of three understanding alternatives:

- (A) The granting authority does not have any responsibility or competency about the subject;
- (B) The granting authority has exclusive and thorough competency and responsibility about the subject;
- (C) The granting authority has responsibility and competency shared with the environmental area about the subject.

Each of these alternatives has institutional, technical, and legal implications. Alternative (A) represents a granting authority attitude subject to criticisms and, because of that, not well recommended, for the water resources area is responsible by the quali-quantitative control of the water resources uses. Besides, understanding the water resources legislation as not including environmental worries is not a consensus among technicians and lawyers, but only an interpretation assumed in this paper.

Concerning alternative (B), the existence of other competent organs to treat the same subject does not establish the granting authority exclusive and thorough competency. Saying that the granting authority has exclusive and thorough competency about the subject is false due to the fact that granting authorities manage just one of the several environmental resources, whose decisions influence and are influenced by other decisions, mainly the environmental field ones.

Therefore, the proposal to reason by nonsense, leading to extreme arguments, makes one to believe that the alternative (C) is the most reasonable and that the granting authority has responsibilities and competencies shared with the environmental authorities about the environmental flow subject. So, it would be admissible to determine that the environmental field participates in the Water Resources Plans elaboration with the purpose of helping in environmental flows determination and definition.

## **CONCLUSION**

The National Water Resources Policy is not concerned with the protection of nature, but with the society economical interests protection, under the view of water economical use. The determinations and attributions existent there refer to the water resources use control only for anthropical purposes in relation to society, with very tenuous environmental worries and with a secondary meaning.

The environmental flows determination may be the main articulation point between the water resources and the environmental managements. Currently, these values are determined by the water resources area by means of its granting criteria, getting ahead of its legal attributions instead of being articulated with the environmental area, in the scope of the water resources plans or in isolated cases of meaningful interventions, such as reservoirs and deviations.

The integration which water resources management must have with the environmental managing (Art. 3rd, III, Law nº 9.433/97) will be able to be supported, among others, in the consensus establishment about environmental flows which must be kept in the rivers, concerning quantity and seasonality, since, supposedly, the responsibilities and competencies must be shared.

When regarding the Water Resources Plans elaboration:

- For this situation, it is supposed to be important to legally determine that the environmental area participates in a more effective way in the Water Resources Plans elaboration with the purpose of helping the definition and determination of the environmental flows, as commented previously;
- It is an objective participation in which the environmental organ specialized technical staff would propose, together with the water resources organs team and the basin committees technical councils, the studies and technical evaluation of the basin development sceneries, in conformity to the environment conservation;

- It is an excellent opportunity to discuss the traditional tradeoff regarding development and environmental protection;
- Currently, the water resources plans have had a greater weight in the anthropical view, probably because of the great representativity of the water users sectors in the basin committees.

For isolated cases, in the lack of Water Resources Plan:

- When there are meaningful interventions , such as reservoirs and deviations;
  - The remaining flows to be kept after dams or in parts of deviated rivers must be dealt between the environmental areas and water resources to avoid the ventures from being not economically permitted or, otherwise, the water ecosystems very prejudiced;
  - It is not recommended that the granting authority, on his own account, without the environmental area judgment, determines, for these cases, what should be the “environmental flow”. That means putting into action, on his own, an attribution which belongs, in a shared way, to the water resources and environment areas.
- For the other cases, it must be kept the water rights granting criteria currently practiced by the granting authorities until the respective water resources plans are elaborated.

It is important to emphasize that such definitions will be taken as starting point for the establishment of new granting criteria for the wholeness of a hydrographic basin and valid for all the granting authorities actuating in it.

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