Throughout history, ideas on the geopolitics of the eastern world have changed. With the expansion of civilization and technological advances, various perceptions regarding the world as it was known were elaborated. Power was linked to certain areas and to certain natural resources.

In the past, fertile valleys were looked upon as a source of power, as later was the Mediterranean climate. Mercantilism and navigation broadened horizons and made land possession and strategic positions valuable. Coal and iron were valorized by the Industrial Revolution. In the 19th century, the invention of steam navigation and the construction of railroads made it possible for the planet to be seen as a whole. Later, this perception was refined upon the invention of the airplane. Control over transportation systems was regarded as a source of power. In the XX century, the development of circulation systems and war methods made the power based on the control of transportation systems obsolete. Furthermore, the industrial development made petroleum a crucial item for power.

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However, it was only when satellite technology allowed man to see the Earth from space that humanity became aware of the planet as a unit and as common property. Everyone has to take responsibility for its use. What also became clear was that nature had become a scarce good. An ecological challenge was posed which had two objectives: the survival of humanity and the valorization of natural resources. The latter involved considering nature strategically valuable. This made nature a political issue, and the uneven distribution of technology, dominated by central countries, and that of natural resources, found in peripheral countries and areas which were not completely regulated, generated serious conflicts. These conflicts occurred among powerful countries, with the objective of controlling natural resources, and between powerful countries and peripheral countries, in an attempt to influence their decisions on how to use their natural resources. This situation began to involve issues related to sovereignty (Becker, 1997; Mendes, 1997). To say that the Amazon has become a symbol of these challenges would not be an overstatement.

On the one hand, there is an actual and continuous concern about human survival. On the other hand, the current dominant trend is the commercialization of natural elements: a market for air, life and water is forged (Becker, 2001) under the rhetoric of great risks and threats to humanity.

The latest concern is the lack of water. This situation has been noted and announced as an actual global catastrophe. Water has been given a strategic value similar to that of petroleum in the 20th century and has been called “blue gold”. Hydropolitics is developing in the world.

It is true that each place on the planet is either directly or indirectly affected by global processes. However, they are not affected in the same way. This is due to the volume of resources, the different kinds of use and management and to different needs. Therefore, it is necessary to distinguish between the legitimate need for the conservationist use of resources and the needs related to the geographic diversity of the Earth. Otherwise, there is the risk of accepting global impositions that have nothing to do with the national and regional interests of each country in the name of the common good.

The objective of discussing the inclusion of the Amazon in the geopolitics of water is to contribute to a more objective analysis of the issue. This analysis is developed in three sections. The first question is related to fresh potable water and the challenge of trying to show that the catastrophic global vision is in fact relative. The second section presents a geo-economic vision which shows that there is a tendency towards the commercialization of water. This is done through the discussion of proposals for the global management of this resource. The third section is related to the uneven geographic distribution of water resources. It clearly shows the riches found in the Amazon and the possibilities for Amazonian countries in terms of the geopolitics of water.
1. THE CHALLENGE OF FRESH POTABLE WATER FOR THE GOVERNABILITY OF THE EARTH: “APOCALYPSE NOW”?

Until recently, water was abundant, available and free. Now that it is lacking, it is a strategically important raw material. Placed on the same level as petroleum, water is now called “blue gold”.

It is always worth noting that water accounts for 63% of a person’s weight. A complex and fragile resource, water is at the same time an economic resource and an ecosystem. It has multiple uses for the population, the industry, agriculture, navigation, energy production, tourism, etc. There is little human work, either in terms of production or consumption, where there is not a demand for water, which cannot be substituted for anything else. Thus, natural water is as a raw material, a product and a production element in all sectors of the economy. However, it is important to bear in mind that water is a raw material with a specific characteristic: it is renewable.

There are various arguments and apocalyptic forecasts about the lack of water. Therefore, the first task is to separate catastrophic forecasts from real facts.

1.1. The Global Apocalyptic View: Blaming the Demographic and Urban Growth.

As is always the case with these kind of forecasts, the “great demographic growth” is considered the factor responsible for the catastrophe. This once again brings up the Malthusian thesis, but it does so in a different light, as follows:

- The world population tripled in the last 70 years, while water consumption is six times what it used to be;
- Fifty-four percent of the available water resources are already being used. The planet’s population is expected to increase by 50% until 2025, thus reaching 9 billion inhabitants. Water consumption will increase by 40%. This means that we will be using 70% of the total amount of water resources;
- 1.1 billion people do not have access to potable water and 2.4 billion do not have access to basic sanitation;
- According to UN previews for the year 2025, two thirds of humanity (2.7 billion people) will not have access to the water necessary for their basic needs;
- The demand for water, both direct (domestic purposes) and for agricultural and industrial activities, will grow. However, the quantity of renewable fresh water will probably be the same: 40,000 km³. The average availability of
Issues of Local and Global Use of Water from the Amazon

fresh water per inhabitant, which was 8,000 m³ per year in 1990, will be limited to 4,000 in 2040 (Le Moigne et Ténière - Buchot, 1998).

- In 2025, the planet will probably have 650 cities with more than 1 million inhabitants,

- The world’s population is concentrated in huge cities along the coastline - 15 out of the 21 cities where there are more than 10 million inhabitants are located on the coast - and while water is becoming scarce, the sea level seems to be constantly rising;

- If a water management program is not carried out, there will be a very high mortality rate unlike anything known in the 20th century.

- Finally, the current forecast is that, if there is a generalized lack of water in the future, water will no longer be a source of life and economy. On the contrary, water will be a source of armed conflict, as was the case with petroleum in the 20th century. There are over 200 water basins that are shared by two or more countries, and 40% of the world’s population lives in these countries. Thirteen of the largest rivers - like the Amazonas, the Danube and the Nile - cross the borders of more than one hundred nations. Fierce competition for water resources might result in violent international conflicts (Sironneau, 1998; Lino, 2002, de Villiers, 2002). As is the case with petroleum, the “black gold”, countries are ready to resort to armed conflict, if necessary, in order to have access to the precious “blue gold”. The reason for conflict is the division of the resource between the countries located upstream and downstream of the basin, and countries that are more or less powerful economically.

1.2. Facts

There are, however, concrete restrictions to be considered.

- Water only seems abundant. Fresh water corresponds to only 2.5% of the terrestrial water mass, and potable water corresponds to less than 0.01% of the total. This is a true fact. Although our planet is made up of much more water than land, the fact is that 70% of this water corresponds to ocean water masses;

- There is a growing competition for different water uses;
### TABLE 1 - Distribution of Water on Earth

<table>
<thead>
<tr>
<th>Nature of the Water Stocks</th>
<th>% of the Total Amount of Water*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Water</td>
<td>97 - 96.54</td>
</tr>
<tr>
<td>Fresh Water</td>
<td>2.5 - 3.5</td>
</tr>
<tr>
<td>Fresh Water Stocks</td>
<td></td>
</tr>
<tr>
<td>Glaciers and Snow</td>
<td>69.6</td>
</tr>
<tr>
<td>Underground Waters</td>
<td>30.15</td>
</tr>
<tr>
<td>Lakes and Swamps</td>
<td>0.29</td>
</tr>
<tr>
<td>Atmospheric Water</td>
<td>0.04</td>
</tr>
<tr>
<td>Rivers</td>
<td>0.006</td>
</tr>
</tbody>
</table>

* Percentages vary and totals are not always accurate.

Source: Fritsch, Jean-Marie 1998

- The water used for domestic purposes corresponds to just 8% of the total water consumption. Water consumption on a global scale is the result mainly of irrigation, which uses three fourths - 70% - of the total amount of fresh water used in the world. Some specialists say that the use of water for irrigation is directly related to the level of development of the countries: less developed countries use more water for irrigation and vice-versa. Thus, peripheral countries use approximately two times more water per hectare than industrialized countries although they produce three times less. Sometimes, the market value of their production is lower than the cost of the water used;

- Over the last three decades, the area taken by irrigated lands - where 40% of the food on the planet is produced - went from 200 million to 270 million hectares, using 70% of the total amount of fresh water consumed annually. However, 60% of this water (42% of the total amount consumed each year) is wasted due to problems with irrigation systems;

- There is a serious problem in terms of lack of access to potable water. This occurs due to problems with water supply and sanitation services. Recent studies show that currently there are over 200 million people that do not even have access to 1,000 m³ of water per year. Other 400 million people are living in a situation of hydric stress - which means they have from 1,000 to 2,000 m³/year. This makes it impossible for any kind of development to take place. Finally, 80 countries, or 40% of the world’s population, have
Issues of Local and Global Use of Water from the Amazon

difficulties to provide their population with water and sanitation services. Consequently, 5 million people die every year as a consequence of water-related diseases. Thirty million people are affected by epidemics and contamination due to water pollution and the lack of water treatment;

- It is necessary that US$ 23 billion be invested a year to meet the demand for potable water and basic sanitation. However, only US$ 16 billion are invested annually. According to the World Health Organization, this contributes to the death of 3.4 million people every year as a consequence of diseases transmitted by contaminated water;

- Fresh water ecosystems are deteriorating rapidly. Sections of several important rivers are seasonally dry and many species of fish and fresh water mollusks are endangered due to changes in their habitat;

- Floods and droughts occur and have serious consequences.

What happens when catastrophic global forecasts and facts are counterposed against one another? The fact is that the lack of water and the possible occurrence of an armed conflict to gain control over it cannot be blamed on demographic and urban growth anymore.

It is known that blaming the problems of the world on demographic growth alone is a false accusation. In the first place, it cannot be affirmed that growth rates will be the same as they were in the last century. In spite of the “outstanding” demographic growth that took place during the last fifty years - 2.5 billion people in 1950, 5 billion in 1990 and 6 billion in 2000 - demographers themselves previewed the inflection of this process. They expect that there will be a total of 8 - 9 billion people in 2025, and the population will stabilize at around 9 - 12 billion people in 2050 (Lê Moigne and Ternière-Buchot, 1998). According to them, there may be an even greater inflection. Secondly, it was demonstrated decades ago that, on the contrary, development contributes to the reduction of demographic growth.

Likewise, the war for water is not yet defined. Resorting to war might bring a prompt solution for the problems related to the lack of water. However, this should not be a common answer to the challenge posed to humanity. It would be a better idea to invest in cooperation.

Finally, the water issue is a socio-environmental matter. The previously mentioned facts clearly show that the problem resides in how water has been used and in how this resource has been managed rather than in the population growth.

Other elements should be added to this analysis that are not related to the global apocalyptic view. These elements include the market and the differences highlighted by a regional vision.
2. A GEO-ECONOMIC VIEW: GLOBAL WATER MANAGEMENT OR COMMERCIALIZATION OF NATURE?

The most evident expression of the valorization of nature as a natural resource is the process of commercialization involving it (Becker, 2001). In other words, the concern with life on the planet has been exchanged for a concern of an economic nature. This takes place in the form of an association of geopolitics and economy. This is a process in which new elements of nature are commercialized and changed into fictitious commodities. They are called fictitious commodities because they are not produced to be sold in the market; however, there is a real market for these products.

As early as 1944, Karl Polanyi called attention to the transformation of land, work and money into fictitious commodities at the beginning of the 19th century. Currently, the same process is happening with air, life and water. There are forums and conventions trying to implant global environment systems to turn these items into marketable commodities (Becker, 2001).

The regulation of the air market through the establishment of an exchange-traded market for carbon credits is the object of disagreement among countries. The fight for the life market in relation to patents and access to genes occurs more silently. The water market is just beginning. Unlike the air, biodiversity and water are geographically located elements. They are also inseparable from historically built social relations. These relations grant them values and use them in different ways, which generates conflict with a global view. In fact, tension was generated by the Biodiversity Convention itself. Although this Convention was concerned about global problems, it declared that natural resources were the property of national sovereignties.

These observations are essential to remind us all that vital goods like air, biodiversity and water cannot be controlled by market laws. It is the responsibility of the society to establish limits to the commercialization of nature.

2.1. “No water without fees”, the most important slogan for the 21st century

Needless to say, geo-economic battles generate tension in relation to the use of water. This involves countries located upstream of the basin or economically advantaged countries in a position of power and the other countries that make up the basin.

There are various examples of this kind of tension. The most significant is the case of Turkey. Turkey is located upstream of the Euphrates River and the Tigris River. It is an economically dominant country whose priority is to use water for its own benefit. The
main objectives of Turkey’s project for Southeast Anatolia were to create an economic outlet into Kurdistan in order to put an end to a rebellion that has gone on there for decades and to develop irrigated agriculture so the agro-industrial production can be exported to the Middle East and to newly independent countries in Central Asia and in the Caucasus. Also, Turkey expected to confirm its control over the countries located downstream of the rivers - Syria and Iraq. The problem is that these countries do not agree with this control, and the risk of conflict involving not only Syria and Iraq but also Syria, Israel and Jordan tends to increase for the use of the Yarmouk.

Another challenge is the fact that three countries, Sudan, Ethiopia and Egypt, share the waters of the Nile. These countries are located far downstream of the Nile, in an arid zone where it would not be possible to develop any kind of agriculture if it were not for the river. Ethiopia is the country that has the most serious problem. Eighty-three percent of the body of the Nile is located in this country, but Ethiopia’s rights to carry out work involving the river are vetoed by Egypt, the most demographically and militarily powerful country in the region. There is also Israel, a country that constantly searches for a hydrologically strategic zone. This is demonstrated by the fact that their military conquests involve territories where there are water resources. After the six-day-war, Israel gained control over all of the Jordan Valley and the Golan plateau, the main source of water for the country. From 1967 on, water was declared a strategic resource and its use was controlled by the army. This favored Israeli settlers (Sironneau, 1998).

In fact, international aid programs are currently confronted with the following political issue: if one country does not have water it is considered poor. However, providing the poor with water creates the risk that they might one day become rich, and therefore competitors (Lê Moigne and Ténière - Bouchot, 1998).

The valorization of water was triggered by two different types of factors. On the one hand, there were catastrophes such as water-related epidemics in Rwanda and Burundi, the lack of potable water in Russia after the fall of the USSR and deaths that resulted from a great number of floods in the USA (Mississippi) and in China (Yang Tsé). On the other hand, water became more present in developed countries due to the considerable increase in its price.

The question is, what are the solutions to this in a context of such inequality in terms of resources and of conflicts involving States that are competing for the same resource and are commonly rivals in the political sphere in a given region?

Various systems have been proposed and utilized, but their basic principle is charging for the use of water. Roughly, there are two categories of solutions. There are legal and institutional solutions, for which there must be the political will of the State in terms of controlling its intensions and developing the management of water resources. There are also solutions that are strictly technical and economic.
Among the strictly economic solutions that are suggested to peripheral countries, the most important one is the quantitative control of the resource and its rational use. This includes prioritizing the fight against the waste of water, especially in relation to irrigation, whose rate of efficacy is below 40%. In order for this to occur, quotas of water to be used in agriculture should be authoritatively defined. There should also be a gradual limitation of subventions that have already been agreed to. At the same time, the investment in irrigation techniques should be encouraged. Unfortunately, these techniques are very expensive.

Another solution would be the construction of large dams - reservoirs to quantitatively control the use of water. This is a common solution in peripheral countries subject to droughts, like Turkey. However, many do not agree with this solution because it may destroy arable lands and encourage consumption.

Another economic solution for peripheral countries would be to give water a market value. It is precisely in countries where water is lacking that it is considered public property. This is particularly true in Mohammedan countries, where water is considered a divine good. According to the World Bank, the concept of water as a common good is one of the reasons why it is lacking, since it leads to the wasteful use of water (Siromneau, 1998). The implantation of a system of fees to be charged for damage and waste in countries where there is a lack of water is previewed to occur within the next ten years. The fee to be paid will depend on the local economic and social reality. This system will evidently be accompanied by the gradual abandonment of subventions to irrigation, since it stimulates the wasteful use of water.

One of the most successful practical answers is a legal-financial combination of public and private interests. BOT (Build, Operate and Transfer) markets allow for a national or a regional public authority that has no financial resources to grant construction and exploitation rights to private companies (energy generation, irrigation, water distribution, sanitation, etc.). This concession could be valid for 20 years or longer. At the end of this period, private companies will have recuperated their investment and construction and exploitation rights will be returned to public authorities. In the meantime, it is expected that the funds (without any increase in the debt) will have helped create a market of users that pay for water and will have fostered social education and professional training.

There is another approach, which originated in the United States, that is more clearly commercial: the creation of a market for water rights. This approach has had variable degrees of success. What generated this experience was the need to transfer water from one basin to another in the west of the country. It involves distributing the rare water resources among users as efficiently as possible. The demand is on the increase. It is the market, not the State, that is responsible for determining the price and the amount of water distributed. There is the clear risk that this vital resource will be monopolized. This is what happened to Chile in the 1980s. The use of the North-American model had disastrous consequences. It resulted in large mining companies and large hydroelectricity producers
controlling water resources, to the detriment of other users. This situation triggered speculation and a false lack of water. Furthermore, this system cannot by itself regulate the problem of non-profitable investments (Sironneau, 1998).

If effective international legislation in the field of water is not available and if there isn’t consensus on the areas where water is indispensable, it becomes difficult to deal with the powerful countries and companies competing for the control of water resources. Thus, it seems crucial to develop the shared management of resources in order to minimize the tension.

On the one hand, there is a tendency towards the idea that it would more effective to apply the concept of charging for the use of water to a large water basin or hydrographic region. This would include the participation of users and of the private sector, as well as that of a regional authority so resources would be better distributed in relation to the needs of the population. In other words, the division would be equitable. On the other hand, there is an effort to organize the global market.

2.2. From Isolated Projects to the Attempt to Create a Global Market

The countries’ actions have not been successful. Thus, the United Nations proposed the implantation of a “global water partnership”. Its basic principle is to save water resources by fighting against pollution and the wasteful use of water. Others believe in a more radical solution. They believe it would be convenient to commercialize water at a global rate that expresses its value as a rare economic commodity. This rate should stimulate negotiation and not tension. This mechanism would demand that the market be controlled in order to avoid speculation involving this crucial good.

There are networks of agencies, financial institutions and non-governmental organizations working together in an attempt to organize the water market. A large network has been formed with United Nations agencies that specialize in dealing with aspects related to water. At a central level, that of secretariats, there has been a Commission on Sustainable Development in New York. This Commission was established after a conference which took place in Rio and, in the field of water, it is assisted by a sub-commission named Administrative Committee on Coordination (ACC). This committee gathers a wide variety of water-related agencies: the UNDP, the UN Program for the Environment, UNESCO, the World Health Organization, the World Meteorological Organization, FAO and UNIDO. The World Bank and other international institutions make up a network to fund public projects and to support private projects. There are also numerous non-governmental organizations (NGOs) acting in the technical and in the social field.

This set of initiatives makes it complex for any attempt at coordination to be made. In spite of the efforts of each agency, the result is weak. The World Bank is the most important water-financing agency (2 billion dollars a year). However, this contribution corresponds to only 4% of the total amount registered in the world involving negotiations
in which water and water-related services have a price. Currently, the total international aid for the area of water is 2% of the total budget.

After the realization that 8/10 of all direct and indirect expenses with the environment were water-related, new structures were created by global institutions and NGOs in order to coordinate and to develop public and private actions. In 1996, the World Water Council was created. It is based in Marseille, France. In the same year, the Global Water Partnership (GWP) was created in Stockholm, Sweden. In both cases, the World Bank, the United Nations Development Program, UN agencies and international associations got together to try to establish global water policy, a 21st century view of water resources and their use.

The GWP offered to develop an integrated management model for water resources at a global level so that the financial aid meant to help poor countries can be better distributed. However, the GWP will have to think about the innovations it will present and compare them to similar previous programs. Likewise, the WWC, in charge of elaborating a “view” of the balance between resources/water uses in the world in 2015, must beware of the fact that forecasts and reports have never put an end to the thirst of those who need water.

At the legal-institutional level, the international conventions that are currently being ratified could present solutions, as long as the countries were willing to apply them. This is the case with the convention on the use of international rivers for other ends besides navigation and with the convention on the protection of transboundary rivers and international lakes. Both are partly based on the economic principles of international water management. They integrate the set of economic and ecologic uses by defending the “rational and equitable use” of these waters according to the existing interests. They also defend the enforcement of “predator/polluter pays” principle through economic and financial mechanisms in order to decrease the level of damage and pollution. There are studies for projects in which similar principles are proposed for transboundary subterranean waters.

The objective of these two new institutions - the WWC and the GWP - is to gather specialists on water from all over the world in the same network. The speed of telecommunications will certainly have an influence on the development of ideas. In addition, the exclusively technical world of specialists on water will be broadened. New subjects will be included, and economists, demographers, sociologists and geographers will be involved. These professionals will gradually bring up their thoughts and concerns, thus considerably enriching the way water issues are approached. This enrichment will occur through the inclusion of the various interests that are at stake. Telecommunications and a broader approach are seen as promising for decisions to start being made at a global level. This is supposed to go beyond isolated management projects, like the ones that have been developed so far.
2.3. Human Creativity as an Alternative

If there is little water, the choices are conservation, technological advances or a policy of violence (de Villiers, 2002). This means that armed conflicts and economic wars are not the only ways to solve water-related matters. Preservation and technology play a fundamental role, which means that the part played by human creativity is also important.

The process of making fresh water through the desalinization of seawater is costly. Nevertheless, it is the world’s greatest technological hope to solve the upcoming crisis. According to some people, making wars or transferring water from one place to another is much more expensive than it would be to develop new technologies to make the desalinization process cheaper. Besides, desalinization plants create a sense of security to the countries, for the resources and the facilities necessary to carry out the process are their property. There are over 7,500 operational desalinization plants in the world, some of which are pretty small. Two thirds of these plants are located in the Middle East. Twenty-six percent of these plants are located in Saudi Arabia alone. At present, the world’s capacity to desalinate water is small. However, research is being carried out and desalinization techniques are improving and becoming cheaper (de Villiers, 2002).

Charging for the use of water is not the only way to achieve conservation. Preserving water means using less of it, making consumption more efficient by combining new ethics in relation to water, the proper use of creative technologies and good management. For example, in certain areas in England and in the United States, water is being stored in deep aquifers. In Senegal, a joint venture with Canada is returning water to fossil valleys, which are dry. In Israel, multiple techniques for the conservation of water were developed: drip irrigation and low-pressure sprinklers, for example. Other techniques involve spraying clouds in order to produce artificial rains, cultivating plants in greenhouses where the water that evaporated is reused and reutilizing sewage water, among other things.

There has also been the reutilization of old practices, using knowledge which was accumulated throughout millennia with the help of new tools. This has occurred in Jordan, where water is being collected and stored in wells. There is a tendency in central countries towards redirecting funds to low-cost “village technologies”. Results have been good. In Tegucigalpa, Honduras, a program based on the creation of water committees in the neighborhoods reduced the amount of water used by the community by 40%. In Karachi, Pakistan, the installation of a subterranean system to channel water from bathrooms to cisterns which are periodically drained brought sanitation to over 600 million people who live in slums. These initiatives, which are invisible to macroeconomists and have no support from the World Bank or from the International Monetary Fund, have been put into practice and there have been small victories. This is generally done with the support of an NGO (de Villiers, 2002).

These are fundamental examples of how human creativity can help to solve problems, but many times they are forgotten.
3. LOOKING AT WATER ON A REGIONAL SCALE: WHAT SHOULD BE DONE WITH THE GREAT LIQUID HERITAGE OF THE AMAZON?

One of the most important contributions of the geographic method is the demonstration that each phenomenon should be analyzed according to an adequate scale. This means that the same situation has different meanings if different scales are used to analyze it. This methodological fundament is very important today, since the global view tends to make regional and local specificities obscure, thus making it harder to identify the real problems using these scales.

This is what happens with the inclusion of the Amazon in the geopolitics of water. The catastrophic indicators of water scarcity do not apply to this region. Therefore, there is the risk that the Amazon will be subjected to policies based on the global apocalyptic view.

Water is the most unequally distributed resource in the world. Fewer than ten countries share over 60% of the total amount of water in the world. Nine out of fourteen countries in the Near and Middle East are faced with the lack of water. They are located in the region of the world where the lack of water is more serious. At the end of the 20th century, other regions were also affected by the lack of water. These regions include Africa (Maghreb, Sahel and North Africa), northern China, California and southern Europe. Currently, twenty-six countries with a population of 232 million inhabitants can be considered countries that have little water resources. Eighty countries, where 40% of the world population lives, are affected by the lack of water. Most of these countries do not reach the level of 1,000 m³ per inhabitant/year.

As opposed to what happens at a global level, Brazil and the Amazon are in a privileged position in relation to the scenario previewed for the near future. In Brazil and in the other Amazon countries, a great amount of water is available.

There are two important questions in this context: does the Amazon face problems in relation to water? How can the great regional liquid heritage be used?

3.1. The Paradox - Abundance of Resource X Social Inaccessibility

Brazil has 18% of the fresh water reservoirs on the planet, and most of this water is located in the Amazon. Surface waters in the country are used mainly for agriculture (61%), for domestic purposes (21%) and for industrial purposes (18%). In regards to the use of subterranean waters, there is a significant reduction in relation to the amount used for agricultural purposes (38%) and there is an increase in the amount used by the industry (37%). The percentage of subterranean waters used for domestic purposes is the lowest (25%).
Current conditions in terms of supply X demand in the country show that there is no lack of water resources in most of the Brazilian territory. However, critical conditions are verified in the northeast semi-arid region during droughts. The situation is also critical in the surroundings of medium-sized cities and mainly in metropolitan regions, where water is intensely used.

One of the conflicts observed involves the use of potable water and the use of water for the purpose of irrigation. This occurs in the northeast and in regions in the south of Brazil where there is a great agricultural demand for water. However, it is in large urban areas that the greater conflicts and problems occur. These conflicts and problems include the environmental degradation of water springs, the increase in the risk for organic and chemical pollution, the contamination of rivers by domestic, industrial and rain sewage and urban floods caused by the inappropriate occupation of spaces and by the inadequate management of urban drainage systems. Another problem is the fact that garbage is not properly collected and disposed of. As a consequence, the cities of Recife and São Paulo already experience frequent water usage restrictions (Tucci, C. et alii, S/D).

In addition to these problems, piped water systems and sanitation systems do not serve all of the population in most Brazilian cities. Expanding the scope of these services will certainly increase the consumption of water. So far, around 70% of the total cost with hospital admissions in the country - which corresponds to 2 billion dollars - is spent on the treatment of diseases caused by untreated water. Only 49% of the Brazilian population has access to sanitation services. On average, only 45% of the urban effluents are treated in the country. For every group of 1,000 children under five years of age, 50 die due to the lack of water.

This paradox is what stands out. Eighteen percent of all of the fresh water on the planet is found in Brazil, but 8.8 million households in the country have no access to piped water. It is clear that there is a serious management problem, and there are also socio-economic problems and problems related to public policies.

The situation in the Amazon is no different from the situation in the rest of the country:
- There is no lack of fresh water resources in the region. The Amazon Basin has the longest hydrographic network on the planet in kilometers, with a total of 6,925,000 Km² from the springs in the Andes to its mouth in the Atlantic. It includes the territories of seven South-American countries, but 63% of the basin is located in Brazil;
- Many of the river springs that form the Amazonas are located outside the country, but there are no conflicts with upstream countries;
- There is not a problem involving demographic growth. This is true both for Brazil - where demographic growth rates have decreased in the past decades - and for the Amazon, where immigration was reduced and the population growth is not a problem;
- The region does not waste water on irrigation;
- Despite similarities in relation to what occurs throughout Brazil, there are sanitation and environmental problems involving cities in the Amazon. They grew too fast during the last few decades, and this growth was not followed by the implantation of the necessary infrastructure.

Regional problems are, therefore, different from the problems that occur at a global level. Global problems are characterized by a lack of supply and a great increase in consumption. In the Amazon, the Brazilian paradox involving the abundance of natural resources and low consumption levels becomes more serious. This is partly due to the lack of access to these resources, which is a consequence of the lack of access to services.

The low level of occupation and the uneven distribution of the population in the region are clearly demonstrated by the number of households concentrated along the roads that surround the forest, in stretches of the Amazonas Channel and especially in state capitals. The expansion of the frontier, which occurred due to the Cuiabá-Santarém road, is also clear (Figure 1).

The number of households in urban areas supplied with piped water by the general network is low, reaching only 40% in most places. This percentage is higher in the areas surrounding state capitals, especially Manaus and Cuiabá. The difference between the situation in urban areas and that in rural areas is shocking. Only 0 - 5% of the households in rural areas are supplied with water (Figures 2 and 3). Lack of access to sewage systems and septic tanks is even greater, even in urban areas (Figures 4 and 5).

3.2. Making regional and global aspects compatible

Regional problems are specific. However, this does not mean that global tendencies should be neglected, for they can offer important suggestions so the best possible use can be made of the liquid heritage in the Amazon.

A few solutions can be pointed out in this regard.

1. Undoubtedly, the priority in terms of the use of water in the region is to implant water supply and sewage system services for the inhabitants of urban and rural areas. The lack of these services is responsible for the dissemination of diseases and for the deaths of people. Two solutions have been thought about for Brazilian cities that can be applied to the Amazon: a) prevention, which is difficult due to the lack of management capacity and supporting programs; b) preventive or even curative planning, which is difficult due to the lack of institutional and economic capacity on the part of municipalities to carry them out. The consequence of this situation is that each problem is treated separately (Tucci et alii, S/D). This shows the need
for public actions to be more comprehensive than the actions of municipalities.

2. Brazil has to face considerable challenges today. Those related to the Amazon include the consolidation of the institutional aspects of water resource management. They also include the control of water resource management in big and medium-sized cities. Finally, there is the matter of environmental preservation. Important steps have been taken towards institutional consolidation. In 1997, the law on water resources (Law no. 9,433) was approved. The National Policy on Water Resources was created with the objective of developing participatory processes involving society and new economic tools to foster the efficient use of water. In 2000, the National Water Agency (ANA) was created to implement the law. This was the beginning of a management process that would take place through committees and basin agencies. In the potable water and sanitation sector, there is a tendency towards the privatization of the services of companies and public institutions. The payment for services is previewed to occur according to a decision made by water basin committees and agencies, but it is sure to take place if services are privatized. It is worth noting that fees should not be established for the use of water in the Amazon due to the abundance of the resource and the lack of services.

3. An important lesson to be learned from the global situation is the creation of a new attitude in relation to water, even in the Amazon. The way society sees water, as if it were an inexhaustible resource, must change. This will stop the wasteful use of water, and a more efficient use of the resource will be implemented.

4. Another lesson taken from the global situation is that once providing the population with water is established as a priority, there will be no ethical barrier to treating this resource as a commodity, as long as well-defined rules are followed. A rapid increase in the consumption of bottled water has been observed in the last three decades. This increase has reached an annual average rate of 7%. This has created a market of US$20 to 30 billion annually. In many countries where there are not enough water supplies to meet the demand, the price of bottled water is higher than the price of gasoline. In the United States, the annual per capita consumption of bottled water increased from 35 to 76 liters from 1999 to 2001. This means US$6.5 billion for the sale of 20.5 billion liters in 2001. The market has managed to raise the awareness of the population in relation to the importance of the quality of water for a healthy life. The commercialization of water to make up for the shortage of the resource is a different matter. Canada signed a contract with China to provide the country with water for 25 years. Turkey has built a platform similar to petroleum platforms to supply tanker ships with water.
This water will be bought by Israel. According to some specialists, selling bottled water in the Amazon would not be profitable in terms of price, but exporting tanker ships filled with water would be feasible and financially interesting.

5. The coordination of efforts involving Amazonian countries is the core of the new approach for the development of the region. This makes it possible for programs that foster internal development to be carried out more efficiently. It also makes international negotiations and the use of “international public” more effective. This approach is explicitly shown in the IIRSA (2002) for all of South America and it is implicit for the redemption of the Amazon Cooperation Treaty as an organization for Amazonian countries.

Although water is not specifically mentioned in these initiatives, the principles of the IIRSA are totally valid in relation to this resource. Likewise, its guidelines include the positive aspects of “open regionalism”, which sees South America “as a fully integrated geo-economic space, for which it is necessary to reduce the internal barriers to the minimum...and strangulations... while commercial restrictions are lifted, which makes it easier to identify highly-competitive global production sectors...” (page 14).

The objective of the Amazon Cooperation Treaty Organization (ACTO) is to put the Amazon Cooperation Treaty into practice and expand it. Amazon Cooperation Treaty already ensures greater freedom in terms of commercial navigation on the Amazonas and other international Amazonian Rivers, provided that each country’s rules, bilateral treaties and the principles that guide International Law be respected. It also establishes that contracting parties will coordinate current health services and take action for the improvement of sanitary conditions and to prevent and combat epidemics. Scientific exchange is also a basic objective that has had positive results with the University of Amazonas.

According to the ANA, the creation of the ACTO marked the beginning of a new phase for sustainable management in the Amazon Basin. The next step is to submit a Project to the Global Environmental Facilities in order to obtain financial resources. The Project’s objectives and its basic components encompass various fundamental issues (Freitas, 2002). In addition to this Project, there should be an emphasis on supplying the population with services, as provided by the Amazon Cooperation Treaty. This Project can foster the development of joint efforts and take a step forward in relation to the utilization of this liquid heritage.
4. FINAL CONSIDERATIONS

The analysis of the inclusion of the Amazon in the geopolitics of water demonstrates that apocalyptic arguments can be looked at in a different way in the region, for its own good and for that of humanity.

The objective here is to show that, due to its privileged situation in relation to the great amount of resources it possesses, the South-American Amazon may and should play a leading role in the world in regards to the rational use of water as a highly competitive sector. This is related to the management of water as a social and economic commodity. In order for that to happen, some premises are suggested:

- A responsible attitude in relation to controlling the wasteful use of water and to preserving it is the duty of all. This includes the Amazon;
- Water should not be geographically determined. The issue is especially social and political, not Malthusian. Political will and creative technologies in activities on different levels might solve the problem;
- Priority should be given to the social use of resources. Water supply and sanitation services are fundamental for human valorization. This is especially true in relation to the Amazon, where there is a great deal of water but most of it is inaccessible. For this reason, fees for the use of the water should not be established in the region;
- Production systems should be adapted to the rhythm of the floods. This would expand the production in flooded forest areas making use of this natural kind of irrigation;
- Problems that result from the fact that various countries share water from the same basin should be solved through cooperation rather than war. It is important to have multilateral cooperation controlled by an authority from the region so the multiple uses of water in the basin can be planned. This includes negotiating funding and involves developing technology, raising the awareness of the population and sometimes exporting water to countries in need of this resource;
- Creativity for the invention of technologies or even simple techniques and management methods to solve the problem of access to water and basic sanitation should be jointly pursued by Amazonian countries. This creativity would make a difference for the region and in the global market;
- Bilateral cooperation is equally important in border areas where the population is concentrated. This does not involve only large-scale initiatives like the production of energy in the Guri Power Plant. It also involves trying to solve problems related to unhealthy conditions. This is the case with the
Colombian proposal to jointly treat unhealthy areas in Leticia and in Tabatinga (Salamanca, 2001). In the Amazon, this could take place through the definition of prices for local products, both for regional consumption and for exportation, especially to ichthyofauna.

Finally, the South-American Amazon could turn water into common property for the population in the region and for the population of the world. This could be done through the commercialization of management techniques and methods developed in peaceful cooperation.

Figure 1 - Legal Amazon. Total number of Households 2000
Issues of Local and Global Use of Water from the Amazon

Figure 2 - Legal Amazon. % of Urban Households Receiving Water Supplies - General Network
Figure 3 - Legal Amazon. % of Urban Households served by the Sewage System or that have Septic Tanks
Figure 4 - Legal Amazon. % of Rural Households Receiving Water Supplies
Figure 5 - Legal Amazon. % of Rural Households served by the Sewage System or that have Septic Tanks
BIBLIOGRAPHY


