WATER, TO FEED THE PLANET

ROMANO PRODI
Chairman of Foundation for World Wide Cooperation
Former President of the European Commission

Nothing is more important, and at the same time, more elementary, than water: it is our life. Right from our earliest school days, we are taught that our body is composed almost entirely of water, and yet we use water without reflecting on how important it is. It is so commonplace that one dictionary definition is rather humorous: "A colorless, transparent, odorless liquid; under specific conditions of temperature and pressure, it can be found in the solid state, when it is called ice; or in a gaseous form, when it is called vapor".

Let us start with an established fact: over two thirds of the planet is covered by water. 97.5% of it is salt water and only 2.5% is sweet water. Thus, we are faced with an overwhelming presence of water, but in a form that can be used neither as drinking water nor for daily purposes. Moreover, water is used in a very different way compared to what we city dwellers imagine, if we consider it in an abstract way, because 70% is destined for agricultural purposes, 20% for domestic or industrial use, and 10% for generating energy. This is why it is appropriate that the topic of water be tied in with the theme of Expo Milan 2015, "Feeding the Planet, Energy for Life". Because, in fact, 70% of the non-salty water is used to feed the planet. Inevitably, this leads to enormous problems involving the 2.5% of the planet's usable water, since we are witnessing a growing and widespread dearth of available water. But there have been, and still are, terrible excesses in how it is used. We have the major, ongoing problem of its scarcity and overabundance, which combine with disastrous consequences. And then we have pollution, which is continuously deteriorating the quality of the water. It is a nonstop battle: roughly one third of the water we drink is recycled water. We also have the problem of the aquifers, which are increasingly dropping as a result of our indiscriminate use of water. These imbalances are so great that

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

over half of the world's population lives in river basins which the United Nations has defined as "under severe water stress". Forty percent of the global population lives around these river basins, which are registering growing imbalances. The more time passes, the more water is being used at a rate that is much higher than the increase in population, even though a strategy fostering a more aware use of water has recently begun to be implemented.

In these past months, the world population has reached the 7 billion mark; in 2025 it is estimated that the number will top eight billion. We are witnessing a steep increase in the population, albeit much less steep than the forecast was 15 years ago. Nonetheless, it is very steep. Water is being used much more intensely than before, despite the disparity between the availability of water and the use that is made of it. But the problems derive not only from the increase in the population but also, and above all, from changes in our diet. Switching from a predominately vegetable diet to one with a high content of animal protein results in a substantial increase in water consumption.

Thus, our world is getting out of hand, with unpredictable changes. For example, in China, the rise in pro capita income is leading to an unexpected level of pro capita water consumption, even though the population increase is lower than previously expected. In this state of affairs, the most important and dramatic reality is that one billion of the world's seven billion people do not have regular access to water. Their access to water is so difficult and erratic, so uncertain and negative from a hygienic point of view, that, in point of fact, one billion people live precariously.

In terms of mortality, the consequences on people's health are striking. According to a UN report on the Sahel, 300,000 children have died there from malnutrition this year, and it cannot be denied that a shortage of water is involved in this tragedy. The problem touches the fundamental aspects of human life. Right now, the most widespread disease is dysentery, a result of unsanitary water systems. In this unjust water distribution, the Middle East and the Sahel, the areas around the big deserts, are obviously struck the hardest and reflect the greatest imbalances. For example, the Middle East is home to the

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

5% of the world's population that has less than 1% of the available drinkable water, even though these are the hottest zones with the greatest need for water. Thus, in this situation, water clearly represents one of the greatest problems involving peace, war, and equilibrium among populations.

Obviously, the topic is not new: conflicts over water can even be found in the Bible. In recent years, there have been clashes over water in Kenya, Uzbekistan, Peru, and Brazil. Although these conflicts are not "regulated," we also have other, very strong conflicts that are regulated. For almost a century, California, even though it is one of the richest regions in the world, has witnessed perennial conflict over water issues, a reflection of the differing interests of the population. Complicated water distribution agreements were signed, but on the basis of calculations made following five years of high levels of rainfall. As a result, the administrators found themselves distributing nonexistent water. This led to decades-long legal problems, pitting various regions of the United States against each other. Thus, water is not a problem of the marginalized countries of the world alone: the problem regards us all.

In Europe and in developed countries, people tend to forget the strategic value of water. We take its availability for granted and are inclined to disregard the fact that it is a finite resource. This is because it does not have a global market; it moves important interests but they cannot be measured in homogeneous terms, as energy can. Thus, great attention is paid to energy and little attention to water. Often, many more conflict analyses address problems of oil supplies rather than water supplies. Actually, all this is motivated by the fact that the most recent conflicts have been sparked by an explosion of energy problems, but tensions over water supplies are continuously emerging and gaining news coverage – and they will increasingly do so in the future.

Many of these are internal conflicts within countries, and their importance is therefore underestimated. The conflicts arise over the various uses of water, such as irrigation for agricultural purposes, drinkable water, and water used in industry. In many cases, the conflicts are difficult to manage. Even more difficult are the major conflicts between how the resources are used and the environ-

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

ment. This includes the construction of dams, the eternal struggle between the accumulation of water and environmental issues. Finally, we also have regulated conflicts that are increasingly rooted within our own society. In Italy, referendums over water were one act in the eternal conflict between the market and the public regulation of the water system. Even though water is the source of all these controversies, we have a hard time realizing that it can be the catalyst of ancient conflicts, like those in the Bible, conflicts that can erupt into war. And yet all this is happening now, and will increasingly do so in the future. The United Nations has released interesting reports on these conflict forecasts, paying special attention to possible evolutions in the middle and long term. These reports merit analysis.

Mediterranean Africa, the Sahel, and the Middle East are the areas with the greatest deficiency of water resources with respect to their population's needs. In one generation, the volume of available water per inhabitant, from Morocco to Iran, fell 80%. This was caused by an exponential growth in the population. To illustrate the present situation with just one statistic, the average age in Italy is roughly 45, whereas in the Sahel area, it is around 18. In other words, the quantity of water is increasing only slightly, but the population in those areas is exploding. Urban uses of water are on the rise, agriculture continues to use obsolete technology, and the availability of water pro capita is falling. This availability has gone from 3,400 m^3 in 1960 to 1,250 m^3 in 1996. It is estimated that, barring important developments, in 2025 the number will fall to 650 m^3, one-third of the alert threshold, which the World Bank has set at 2,000 m^3. Therefore, it is a generalized risk, not a local problem. The World Bank launched a red alert for Arab countries, and today, nine out of twenty-two Arab countries consume more than 100% of their renewable water reserves.

This situation has a number of striking aspects: for example, Libya's great canal, whose water comes from a non-renewable source. To see the canal in the desert gives a sense of abundance, but also a sense of precariousness, since the water will flow for an unspecified – but limited – number of years.

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

Even though it cannot be listed among the direct conflicts over water, the conflict between Israel and Palestine, too, has been aggravated by tensions over the Jordan river and the West Bank aquifers, which provide Israel with 80% of its water needs. And water is a life and death problem to Israelis and Palestinians.

This also holds true for the Golan Heights, where 152 small springs, although not producing a relevant quantity of water, are nonetheless crucial to the life of the inhabitants. On the one hand, this scarcity has generated great tension, but it also represents a rare case of impressive technological developments. Drip irrigation, ad hoc mixtures for plants, and new plant biology, all developed in Israel, have achieved spectacular levels of production with a very limited consumption of water, which is nonetheless still greater than the replenishment rate.

But another, equally important conflict involves the Tigris and Euphrates rivers. Mesopotamia has always been a highly productive area, not to mention the battleground of the war between Iraq and Iran, one of the bloodiest conflicts in history. Today, Turkey is constructing a system of several dams, including the famous Ataturk dam. According to experts, this will endanger the very existence of Mesopotamia. These predictions are putting centers of strategic analysis on alert throughout the world. It is clear that this situation has arisen because, at the present time, there is no globally-accepted treaty and, above all, there is no global authority to ensure the treaty's constant updating and enforcement. The situation is dramatically serious.

An even more serious situation concerns the Nile river. The 1929 treaty distributes water between Egypt and Sudan, but it completely ignores the requests of the other nine countries upriver. Things were peaceful until a number of political events occurred: first of all, Sudan was divided in two, but above all, dams were constructed in Ethiopia, as they were in Turkey. Today, the so-called "millennium" dam is the cause of growing tension, even though Ethiopia promises that it will be used exclusively to generate hydroelectric power and that all the water will be returned to the river. Debate has begun over how to ensure that this obligation will be respected, and over the drop in the availability of water downriver during the

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

lengthy period while the new, enormous basin is being filled. The Nile is certain to be dry by the time it reaches the Mediterranean Sea because the water will have been used up first. The cultivated terrain of the Nile delta is already in trouble, in part caused by the advancement of salty sea water due to the lower flow rate of the Nile. This revolution will have enormous effects and is in part a result of the use of the least environmentally-sustainable irrigation model there is: a system of flowing water that requires ten times more water than the quantity used by the drip irrigation method. Only a policy that provides new technology and new capital can turn this situation around, but it cannot be organized by a country like Egypt. Thus, the predicted day approaches when the already limited water resources will become even more scarce and the danger of tensions will become even greater.

The tables of the Global Water Security show that the problem is not limited to the Middle East. Conflicts are underway along the Indus and the Mekong rivers and provide a distressing picture: obsolete agricultural techniques, salinization of the soil, inadequate infrastructures, water pollution, etc. The result is not only a scarcity of food but also uncertainties regarding its healthiness. This phenomenon exists all over the world, from the rivers and lakes that used to be regulated by the USSR, to internal rivers in China. In fact, a major discussion is now underway in China over whether the courses of big rivers are to be deviated north, since Beijing might run out of water.

Naturally, the disputes between the various countries represent the greatest risk for humanity. The probability of an increase in wars is very high and grows in tandem with climate change and the probabilities of droughts and floods. Another consequence is a greater fluctuation in food prices, as well as the previously mentioned increase in demand due to a growing population and improvements in diet. Diet change is even more relevant than population growth. For example, it takes roughly 20,000 liters of water to produce one kilo of beef; to produce one kilo of grain requires approximately 500 liters of water. This illustrates the effects of shifting the diet primarily toward a greater consumption of animal protein.

Over the past few years, we have witnessed another event, which also has been fairly neglected: the advent of

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

biofuels. Governments are obsessed with energy and have initiated incentives for biofuels, making them more convenient compared to the price of energy. The moral of the story is that roughly 10% of irrigated land in the United States is dedicated to producing biological fuel. In Europe, if the present policies are maintained, the total will be 15% of irrigated land in upcoming years.

Since it is a generic incentive, often the best land is used instead of marginalized terrain or brush. For example, even though this seems dangerous and senseless, today the terrain of the Po Valley generates more money if it cultivates biofuel rather than beets or corn.

It is fitting that the problems of food are linked to those of peace and war because, with reference to recent and ongoing events, the price of food has always been at the root of many of the social tensions in the Middle East. Thus, water is a politically complex and prominent problem. With a modicum of foresight, people should dedicate themselves to accelerating the revolution even in the field of genetics, concentrating on new plant species that consume less water. Scientists say that if we invest in this research, we will soon be able to halve the amount of water used for plants. We must modify irrigation systems, revolutionize the system of pumps with decentralized energy production, with solar panels and small pumps to supply families. This is the most dramatic problem in the Sahel. Finally (and this is an element shared throughout the world), there is the major problem of water purification and recycling. The risk of pollution is growing everywhere, putting food production increasingly at risk. It can come as no surprise if the eternal struggle for food soon worsens.

So what is happening with regard to this situation? What is happening is that we have no world authority dealing with the problem of water as a generalized problem. There is much research, many research centres, but what we need is a large, worldwide "government" of water. Or, if we are unable to create this government right away, we could at least create a reference point that could render the situation comprehensible and offer a vocabulary that is shared by governments everywhere. We need to take on the juridical, political, and technical problems as a whole, as well as those dealing with the alternative

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

uses of water and its purification. We need to use less water, to use it more efficiently, and to distribute it equitably. All this also implies top-level scientific work to analyse every type of basin and propose the necessary actions.

Finally, we should also reconsider the analyses of the global consequences of biofuel cultivation and modify energy policy accordingly. To this regard, help is being provided by an unexpected technical development that is revolutionizing the world economy: oil gas and shale gas in the United States. This truly is a revolution because it is changing the face of the world economy. The United States is becoming a country with low-cost energy and in just a few years it will become self-sufficient and a potential energy exporter. At the moment, shale gas in the United States costs less than $4 per B.T.U., whereas it costs $12 in Europe, and $16 in Asia. All this is changing the worldwide industry at an extraordinary rate. A number of energy industries are returning to the United States, marginalizing Europe. This will most likely change the policy of biofuel incentives in the United States, but probably not in Europe.

But there is something else we must consider: if 97% of the world's water supply is salt water, why not desalinize sea water and make it sweet? The answer is simple: all over the world, we are accustomed to water at very low prices, if not for free, and desalinization is very expensive. Enormous progress has been made, but desalinized water costs approximately 60 U.S. cents per cubic meter, whereas the average cost of water for agricultural purposes now costs less than 10 cents per m^3. There is still a long way to go before desalinization for agricultural purposes becomes affordable.

The problem of price policy, the famous three "T"s – tariffs, taxes, transfer – is one of the big political problems that involves every country. Many also include the problem of the privatization of water, and some believe it is the solution to the problem. But the results are uncertain, above all in the poorer corners of the planet, and have led to conflicts and extreme cases of corruption and exploitation.

The problem is so delicate that a United Nations convention for the use of water and irrigation systems was drawn up. The convention was signed and approved by

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

the General Assembly of the United Nations in 1997, but it has yet to be ratified by a sufficient number of countries to become law, and there is no guarantee it will be in the future, either.

On the occasion of Expo 2015, something could be created in Milan that also provides an example to the rest of the world. The Expo is a very serious event, a worldwide showcase. When the city competed with Seoul and Izmir to be awarded the event, it was interesting to see how both Milan, a mature city, and Izmir, which aimed to validate its international recognition through the Expo, wanted to make a mark on history. Nonetheless, it would have been a big mistake if Milan had been tempted to follow Shanghai's example. The Shanghai Expo was one-of-a-kind because it was a way for a country with one billion three hundred million inhabitants to make a name for itself. The city wanted to show itself to the whole world. Instead, something different and more long-lasting could be done in Milan. On the one hand, the Expo must amaze and please people; on the other hand, it must also focus attention on the theme Milan has chosen: how to feed the planet. Milan has many cards to play. It is the city of Leonardo da Vinci, the very first person to design an irrigation system with canals, dams, and waterfalls. The Navigli canals are a legacy of the first genius who dedicated himself to this topic. Milan is home to excellent research facilities that deal with legal and political problems, like the Università Statale and the Università Cattolica, and with technical problems, like the Politecnico. The Po valley has a complex network of agricultural faculties, even if research in this field has been cut back in recent years. Three generations ago, Italy was far advanced in seed research and in every innovation in agricultural technology. Today, the country has lost its leading position, marginalizing agricultural research from its studies. The Po valley also has many mechanical industries, which produce pumps, tubes, and everything for an irrigation system that, here, is one of the most advanced in the world.

Thus, the Expo can bring together all this knowledge, proposing better ways to use it, sustainability, and efforts to set standards of consumption and for the resources, in order to avoid waste, contribute to international cooperation projects, and increase the awareness of young people

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net

on these topics. These must be the objectives of the Expo; it should do more than entertain, create conviviality, and show what is happening in the world with cutting-edge means. It should also leave a legacy of innovation and change, and its reference point could be the city of Milan. I have spoken of this informally with the United Nations Secretary General, who expressed interest. It will take a lot of work to turn this idea into an institution of reference, but the prospects are good for a city like Milan, for the Po river valley, and for an Expo which intends to make a mark, which wants to become a reference point, bringing together scientists from different countries and with different expertise for a shared objective.

In 2003, the U.N. General Assembly declared 2005-2015 the international decade of water. The title, "Water for Life," is very similar to the Expo's. The decade was inaugurated in March 2005 on the occasion of World Water Day. It will conclude in 2015, when, right at the end of the decade, Milan's Expo will be inaugurated.

I believe this is an occasion that is not to be neglected.

ISSN 2283-7949
GLOCALISM: JOURNAL OF CULTURE, POLITICS AND INNOVATION
2014, 1-2, DOI: 10.12893/gjcpi.2014.1-2.5
Published online by "Globus et Locus" at www.glocalismjournal.net