# Sustainable development and water management as quality of life indicators in Mediteranian area

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***Abstract-*** Water is a key biodiversity item, crucial for both, economy and society. Without it there is no human survival. Water sustainability has its environmental, social and economic aspects, and each of them is in relation to each other's intertwining.

There are human needs as well as the needs of ecology, placed above all others. The problem is that water and water resources must be put in the form of a water resource policy, which will be correlated, that is, have an integrative relationship with sustainability, and the crucial parameters that it entails.

The bottom line is that in the promotional approach promoted, indicators must also be integrative, meaning representative, simple, extremely clear, measurable, well-connected to economic, social and physical aspects, so that future testing can rely on them, in terms of reliable rappers.

***Index Terms***- water,biodiversity,environmental,sustainbility

## I. Introduction

Water sources in the the Mediterranean area are limited, unequally distributed in time and space, and very vulnerable to external influences. In the last century, water needs have grown, growing the coasts in many countries by three hundred cubic meters, annually. When such countries are considered as those with a water scarcity problem, their total population is nearly two hundred million. Sixty million of these are experiencing water shortages of five hundred cubic meters of water annually. Especially big is the problem in the southeastern part of the Mediterranean, where about twenty million people are facing water shortages. A factor that exacerbates the already difficult water scarcity situation is "the overexploitation of one part of groundwater."[1]

In the Mediterranean area, water is a key resource, necessary for its development. Without it, there is no improvement in the lives of residents. This is not the case only when it comes to local households, but also applies to major sectors of the economy, such as agriculture, agro-industry, ie food and beverage production, tourism, paper production and the like. For example, in some Mediterranean countries (Portugal), according to the National Water Plans, nearly eighty percent of water goes to agriculture, then fourteen for energy production, and about four and a half for industrial purposes.

## II. Mediterranean area

There are numerous ongoing projects in order to improve the situation in the Mediterranean area. One such project (Melia), insists on dialogue, with a view to introducing integrated water resources management throughout the Mediterranean. The term integrative implies that the solution does not come from the imposition from above, and by the same such planning, and then the implementation of the given infrastructure, but that a multi-layered process, which involves the theoretical part, and then open and transparent planning and implementation process, in which stakeholder involvement can take place.

Therefore, issues that need to be considered in order to achieve the concept of sustainability of water supply resources are, above all, general and political issues, and after that technical. Those issues are necessary for sustainability of water supply resources concept in order to work.

Some experts consider this to be more than just a political issue. They agreed that the focus should be on ensuring the health of mankind as a whole, and therefore the priorities for water resources must be set at the highest political levels, both international and national, which will accelerate the adoption of minimum water levels by the heads of the population of each of countries, which will be guaranteed by national governments and international representatives (relevant agreements and top-level international acts).

It is necessary to raise awareness regarding the use of water resources, by taking care of our own management of each of us individually, and when it comes to the disposal of our own water resources (at the individual level), thus confirming our genuine interest in the well-being of all in the home country.

Furthermore, work on changing the paradigm of regional, because the water is still not considered to be everywhere, as well as a resource that has its limitations, since "it is vital to reach the concept of sustainability."[2] Although tourism development is

[1] Benoit G., Comeau A. (2005). A Sustainable Future for the Mediterranean: The Blue Plans Environment and Development Outlook (UNEP). Mediterranean Action Plan (MAP). United Nations Environment Programme. Earthscan. London. p. 36

[2] Osório-Peters, S. (2003) Recycling. In: Rennings K., Zwick T. (Employment Impacts of Cleaner Production. ZEW Economic Studies (Publication Series of the Centre for

important, work should be done on a recycled water use system. Also, the price of water greatly affects the quality of water resource management.

As waters exceed the boundaries between the states (rivers, lakes, ...), it is necessary to establish better cooperation between the states that share common reservoirs with water.

When it comes to technical issues, however, there are key changes that need to be made: water resource management needs to improve the water supply infrastructure as well, and ensure greater efficiency of network supplies, also to minimize water loss in these processes, to improve capacity, both technically, for water supply and management, and to reduce water requirements by forcing the use of state-of-the-art technological solutions, thereby achieving great savings, using the latest irrigation and supply techniques.[3]

It must be started with defining the ways how to measure water. For example, the waters contained within an aquifer contribute a great deal to the final values, although they are classified as non-renewable sources of water, sometimes exceeding, in importance, renewable sources of water. This is crucial from the point of water resources sustainability concept. Likewise, green waters are a significant factor in drought-prone countries. Neither desalinated or recycled water should be neglected, as they are valuable for irrigation. When, as it happens, the aforementioned water sources are excluded, and all measurements are reduced to dealing with blue water only, then this has consequences for the planning processes that make measurements the most.

Difficulties also arise from spatial variations in surface or groundwater. The problem arises because measurements and estimates are made so that they are separated from each other, although both represent the same water cycle.

This, unfortunately, usually results in an overestimation of the estimated water supplies in the territory for which the measurement is being made. Such mistakes are very common, even when research is conducted by experts who are closely expert in the field.

Special problems arise when measurements are taken in the waters fragmented boundaries, and they are to approach difficult. In this case, the surface water must be measured according to the principle of river basin, while the groundwater must be approached as underground or via an aquifer. The aforementioned basins rarely have the same geographical conditions, especially when "it comes to countries where the government drought, while almost never correspond to political boundaries (do not match).[4]

Thus, for example, in countries where there are heavy droughts, the final amount of water that will be assessed as necessary will be different if there is no intended capacity (reservoirs) to capture water during short rainfall periods. On the other hand, all the specificities of the spatial type, which vary from country to country, must be respected, as well as the weather specificities, and also the climate can affect in a very specific way and at different time periods. All these details must equally be considered as important.

It is of the great importance that we have good and accessible data, because if they are not such, answers to the asked questions will not be reliable. It is very important to specify at the outset when we begin measurements who has responsibility for data collection. The reason is that in some of the Mediterranean countries (Portugal), citizens holding wells on their properties consider groundwater, together with wells and property, their property, and do not allow any measurements outside their control conducted from outside. Although the legislation related to these issues has changed, nothing has changed in citizens approach to such important issues.

There are also problems with water availability. For example, when there are droughts or floods. In addition, the part of the water that goes downstream to another country, for which certain agreements have been signed, cannot (if not in accordance with it) be taken for measurement purposes by upstream expert teams. At the same time, the use of water and its upstream pollution can have unprecedented consequences for downstream users. Groundwater availability, in turn, depends on the state's ability to separate the amount needed to measure it.

## III. Indicators

The importance of indicators has been noted in the 1980s and 1990s. Even then, the importance of using precise indicators was called for. First in the late 1980s (Brutland Commission, 1987). Then, ten years later, principles (Ballagio principles) were proposed that addressed indicators for achieving sustainable development. These are four main principles that are a prerequisite for sustainable development: first of all, establishing clear goals, in line with the vision of sustainable development, then a meaningful and systematic approach focusing on current issues of priority, identifying key issues to which the approach will be chosen to direct, the necessity for establishing continuity in approaching them.

Thus adopted rules are a guide to accession process, which involves the creation and selection of adequate indicators, their interpretation and presentation of results. They are understood in their mutual conditionality, and the need to apply them as a complete and inseparable package in order to achieve the results of the expected quality. It is also intended to work on them for the purpose of their further advancement, both by local communities, national governments, non-governmental organizations, corporations and international institutions.

At the beginning of the 2000s, additional questions (by the OECD)[5] were proposed to integrate environmental, economic and social aspects of water resource management. These are the following questions: what is the environmental impact of

European Economic Research (ZEW), Mannheim, Germany), Vol.21. Physica.Heidelberg. p.182

[3] McKinsey (2010). Managing water strategically: An interview with the CEO of Rio Tinto. McKinsey Quarterly.

[4] Sullivan C.A., Manez M., Schmidt S., Moors E., Preziosi E., Loubier S., Inman D., Tarnacki K., Wyngaert I. Van den, Olsthoorn A.F.M., Frbrich J., Blmling B., Koundouri P., Panebianco S., Giacomello, A.M., Gnther D. (2007). `Report on indicators for water stress.` AquaStress Deliverable D2.1-3, Centre for Ecology and Hydrology, Wallingford, UK. p.41

[5] OECD (2008). Key environmental indicators.Organisations for Economic Cooperation and Development, Paris.

eliminating environmental subsidies for the agricultural sector, what are the environmental effects of implementing an alternative agricultural policy and instruments, such as direct payments instead of market price support, what would be the environmental effects of continuing to apply existing policies in the future, what would be the economic consequences for the agricultural sector, if the environmental targets set were achieved, and which were set as the most important in international documents? It must be understood how valuable it is to set precise indicators, whether for short, medium or long term projects. They are used to monitor and evaluate the quality of project implementation, and to evaluate their effectiveness, but also to obtain a key answer: the extent to which the measures actually taken lead to the achievement of sustainable development.

Here, we have certain principles and requirements that indicators themselves must meet that we can apply during the implementation of short, medium or long-term projects. These would be the following principles: the legitimacy of the measures used, reliability, that measured can be measured regardless of who subsequently makes the measurements, applicability to project objectives or to different needs for information, receptivity to observed situations and their variability through the passage of time, financial efficiency in the sense that it was worth the money invested and the time spent, promptness, or that it was done within the stipulated time, targeting or affecting the quantity, quality, time, the group that is mapped and the location selected.

In the context of water resource management, some experts point out what would be the characteristics of valid indicators, that would be the following characteristics: that they are authentic, scientifically legitimate, easy to interpret, and that they can express tendencies through the passage of time, to warn in advance of irreversible tendencies, that they are susceptible to changes to which they should point out, that they are based on data that is appropriate and whose quality is unquestionable, that they can be updated at regular intervals. Unfortunately, not all indicators have this characteristic, so they are not in line with the money invested, time, capacity. They may be the best possible result under the circumstances, but that is not what is really intended to be measured.

Therefore, it is specified what are exactly the challenges faced with by all those who are trying to establish an indicator framework for successful management of water resources. These would be: appropriate indicators in use, because too many indicators are too complicated, already complex issues, on the other hand, if the number of indicators is too small, they will not have the authenticity or be able to make the necessary connections of the dynamics of the system itself. Then, the problem is the scale, because it is not understood that for the Mediterranean area it is necessary to use a different set of indicators for national, ie local measurements.

In order to avoid the mentioned gap in information, especially when it comes to current measurements in relation to the ones that will be made in the future, it is suggested what this information should provide: to distinguish the causes of pollution, to promote research concerning human health and environmental issues, investigate the environmental impact of leading socio-economic forces, investigate through indicators how much water contributes to quality of life, approach the future state or future potential, long-term environmental changes, evaluate the effectiveness of the policy and legislation in the aquatic environment.

When it comes to UN Water Monitoring, here the scope of research is voluntarily narrowed down to monitoring initiatives that were global in scope, in relation to the following four dimensions: service, quality, quantity, management . In doing so, the attempt to chart was by itself exempting all national, local, or regional monitoring initiatives, unless they were part of an attempt at systematic, planetary monitoring. Forty-four initiatives were recorded in total, and nineteen were classified as follow-up. Thirteen of them were further classified much narrower, depending on the countries classified, key documents, and the surveys conducted.

So, as we have emphasized on several occasions earlier, water resource management is a very demanding job, which is difficult to achieve in practice. If we have these indicators that are well understood, then we have a good instrumentation. However, some experts believe that there are no indicators available when it comes to managing water resources, that is, not those that would help society manage its water resources in a way that intensifies the sustainability of water use. That is, there are no operational indicators, for that matter.

Deploying water for different purposes is always a political challenge, especially when it comes to a region where water scarcity exists, such as in the Mediterranean. It is necessary to know the hydrological and economic bases that are easy to identify and identify. Having such one piece of information within competitive political discourse regarding water resources is a challenge.

Indicators of hydrological and economic efficiency are very important. However, they will not be tested unless they have an impact on social or political processes, which depend on how water is valued, how it is allocated, how it is managed, then recycled and disposed of. There are a number of useful approaches that allow us to communicate about them.

It has to be said that water security has been achieved in all economies that import net food and virtual water. Almost all the economies of the Mediterranean area fall into these. All the achievements of water security through these, which can be achieved by intensifying sustainable access to water or economies, have been achieved thanks to the diversity within the economy. Diversity within the economy may be fueled by water scarcity, but it is not conditioned by it. It depends in fact on how much human resource improvement has been achieved, and also whether the "synergy of private and public investment" has been achieved,[6] and whether entrepreneurship has been nurtured and developed.

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[6] McKinsey (2010). Managing water strategically: An interview with the CEO of Rio Tinto. McKinsey Quarterly. p. 64