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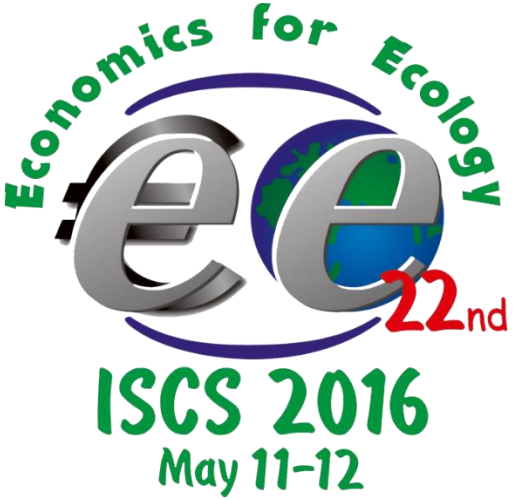

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INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) FOR SUSTAINABLE DEVELOPMENT

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Water is an essential resource for sustainable development, however it is not often taken into account. In order to find effective and lasting solutions to the problems related to water resources, it is required a new form of governance and management paradigm. This new paradigm is included into the concept of Integrated Water Resources Management (IWRM), which has been defined by *Global Water Partnership GWP* , as "a process which promotes the coordinated management and development of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of ecosystems". Thereby, the IWRM is a systematic process for the development, operation and monitoring of the uses of water

resources. IWRM is based on the concept that water resources are limited and their uses are interdependent.

IWRM challenges the conventional sectoral systems management, giving an emphasis on holistic approaches that promote decision making among different sectors and levels. Furthermore, it recognizes that the "top-down management" focused on the supply with little interest in the beneficiary demand and the emphasis on technical aspects and conventional sectoral approaches have imposed and currently impose high economic, social and ecological costs to the society and the environment. It is commonly known that the way that water is managed nowadays is not sustainable from an environmental point of view, nor is in financial and social terms. IWRM is defined as a process of change, which aims to transform the existing water management, this is why, it has not a starting point nor one end. The global economy and society are dynamic, as well as the environment, this is the reason why the different systems that will be based on IWRM, must know how to respond to new changes and be able to adapt to new conditions and/or to economic, social, environmental variations and human values.

IWRM is not an ultimate goal by itself, but a means by which meet three strategic objectives:

- Efficiency for greater durability of water resources.
- Equity in the provision of water resources between different socioeconomic groups.
- Environmental sustainability to protect water resources and the associated ecosystems.

It could be said that government actors, faced with the prospect of drastic changes, which involve the implementation of IWRM in their regions, might conclude that this challenge is complex, since it includes many difficult policy to create, as well as decision-making. Without any doubt, it is much easier to leave the system as it is, so it could be avoided confrontations of those who benefit from the current situation. However, keeping the existing policies and practices is not an option, because the problems will be worse and further the solution process will be complicated.

IWRM is an ongoing process that responds to changing situations and needs (translated from GWP 2004).

Integrated Water Resources Management (IWRM) should be seen as a dynamic, continuous and iterative process with long-term results and

having a vision for the future, as distinct from a linear and static process. It should take as a fact that the perfect IWRM does not exist and finding perfection can lead to stagnation of actions.

Stages of planning and implementation of IWRM:

IWRM is based on four principles - these are the Dublin principles:

Principle 1: The water is a finite and vulnerable resource of the WHO, essential to sustain life, development and the environment.

Principle 2: The development and water management should be based on a participatory approach, involving users, planners and decision makers at all levels.

Principle 3: Women play a central role in the supply, management and protection of water.

Principle 4: Water is a public good and has a social and economic value in all its competing uses.

Integration of the 3 E

The integrated water resources management is based on the notion that water is an integral part of ecosystems, which is a natural resource and a social and economic good, whose use depends on its quality and quantity.

The IWRM framework, as was developed by *GWP*, is the integration of *the* three E: economic efficiency, social equity and ecology and environmental sustainability (adapted from GWP 2008):

- Economic efficiency in water use: Water should be used with maximum efficiency considering the increasing scarcity of water, its fragility and vulnerability, and its growing demand.
- Equity: The basic right of all the people to access to a water supply with a sufficient quantity and quality must be universally recognized.
- Ecology and Environmental Sustainability: The current use of the resource should be managed so that systems sustaining life do not

deteriorate and may ensure that future generations can make use of this resource.

Models for local government engagement in IWRM processes

There are two main paths or models through which local government can start engaging:

1. *Engaging with new IWRM institutions.* In many countries, implementation of IWRM has been taken up through the adoption of new policies, revision of water laws and establishment of new institutions for water resources management. These reforms aim to manage water in a fully integrated way, largely based upon the catchment or the river basin as a unit of management.

The principles underlying IWRM include an inherent tension between the appropriate levels of centralisation and decentralisation of water control. On the one hand, the catchment or river basin is considered as the most effective unit for water management (linked to the first Dublin principle). This will normally include several or tens of municipalities or local governments. On the other hand, the second Dublin principle makes a strong call for management at the lowest appropriate level without specifically saying what it means: community, local government etc.

Centralised approaches, because of their higher level of scale, may be well-positioned to oversee externalities caused by different uses. They also may have sufficient hierarchical cloud to enforce water resources management rules. However, there are also arguments in favour of decentralisation of water control in many contexts. Local management can then be better adapted to the local context.

2. *Implementing IWRM principles through local actions.* A second way in which IWRM can be implemented is by adopting and following the underlying principles in the implementation in the day-to-day water business in which local governments are engaged.

Principle-based approaches aim to develop guidelines, based on the application of IWRM principles at all stages of projects and programme cycles The idea behind taking a principle-based approach, is that if all sub-sector and all stakeholders in water management try to apply good IWRM practice at their own level, in their own work, this will in turn lead to the emergence of better local level water resource management, and will be an important first step in the process of IWRM.

Conclusions

Integrated Water Resources Management (IWRM) can be described as the coordinated development and management of water, land, and related resources to maximize the resulting economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. The Dublin principles adopted at an international conference in Dublin in 1992 promotes a participatory approach to integrated resource management on a watershed basis and promotes the recognition of the economic benefits of managing water and related resources.

IWRM is one form of the *ecosystem approach* as a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way (Millennium Ecosystem Assessment 2005). IWRM promotes the management of water and related resources (land, biodiversity, etc.) on a watershed basis. This allows IWRM to be a relevant framework for both small catchments and transboundary basins.

Local government is facing increasing responsibilities in a number of areas, including new roles relating to services delivery (like more regulatory functions), development planning and environmental management. In fulfilling its roles in each of these areas, water resources should be a key factor of consideration, as these will have impact on local government's performance. Yet, local government is not at the forefront of engaging with integrated water resources management.

THE ADVANTAGES AND DISADVANTAGES OF THE TRANSITION TO GREEN TRANSPORT IN UKRAINE FROM THE POINT OF VIEW OF ORGANISATION AND ECONOMY

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Air pollution from the point of view of chemical hazards to human takes the first place. According to scientific research, the contribution of air pollution is from 80 to 90% of the total carcinogenic and non- carcinogenic risk which is associated with the influence of the pollution of other contaminants in the environment. Transport consumes a huge amount of