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UNEP World Environment Day and Water Resource Efficiency

[1]S.P. Bindra and [2]Ali M.Segayer

[1]UN Expert, Libyan National Academy Tripoli Libya/Al Mergeb University
[2]Nuclear Research Center

Abstract: The paper is designed to present highlights of UNEP World Environment Day (WED) 2012 that coincides with first international conference on water resources of Jabal Al Akhdar being organized by Omar Al Mukhtar University. It gives special emphasis on water resource efficiency and focuses on following UNEP priority areas to demonstrate that how UNEP works to promote water resource efficiency and sustainable consumption and production of water in both developed and developing countries.

Climate Change,
Disasters and conflicts
Ecosystem management
Environmental Governance
Harmful Substances

The idea is to help achieve increased understanding and implementation by public and private decision makers of policies and actions for water resource efficiency within the framework of Integrated Water Resources Management (IWRM) and its sustainable consumption and production. After an overview on international scientific assessments, such as the Millennium Ecosystem Assessment, the Global Environmental Outlook and the 4th Assessment Report of the Intergovernmental Panel on Climate Change, paper shows that how it is becoming increasingly evident the world in general and Libya in particular cannot achieve sustainable economic growth without significant innovation in both the supply (production) and demand (consumption) sides of the water market. Finally it shows that how Libyan Center for Environment Engineering and Sciences (LCEES) set up at Libyan National Academy to meet basic water needs requiring producers to change design, production and marketing activities and consumers to pay heed to environmental and social concerns – in addition to price, convenience and quality – in their consumption decisions.

Key words: WED · UNEP · IWRM · LCEES · Water resource efficiency · Water market · Environmental and social concerns

INTRODUCTION

World Environment Day (W.E.D) is established by UN General assembly in 1972, to mark the opening of the Stockholm Conference on the Human Environment. This day is commemorated each year on 5th of June, since 1974, through which U.N stimulates worldwide awareness of Environment The objective is to empower people to become active agents of Sustainable and Equitable Development. It aims to Promote understanding that people are pivotal to changing attitudes towards environmental issues. It assists to Sensitize Policy and Decision makers and help enhance Political Attention and Action on Environmental issues.

Like“ Every Year, Everywhere, Everyone” year 2012 is certainly going down as one of the biggest WED celebrations ever heard far and wide, as people of different ages, nationalities and cultural backgrounds are coming together to ensure a cleaner, greener and brighter outlook for themselves and future generations.

Corresponding Author: S.P. Bindra, UN Expert, Libyan National Academy Tripoli Libya/Al Mergeb University

World community is committed to launch a Green Mountain Conversation campaign in Benghazi to petition against the excavation of mountain faces and the resulting deforestation in Libya.

Libyan Center for Environment Engineering and Sciences (LCEES) set up in Libya by one of the authors has announced an eco-initiative to popularize biodegradable bags across its network. The objective is to:

- Empower people to become active agents of Sustainable and Equitable Development
- Promote understanding that people are pivotal to changing attitudes towards environmental issues.
- Sensitize Policy and Decision makers and to Enhance Political Attention and Action on Environmental issues

The 2012 theme for World Environment Day *is Green Economy: Does it include you*?. Green Economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient and socially inclusive. It is one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency and prevent the loss of biodiversity and ecosystem services. It is catalyzed and supported by targeted public expenditure, policy reforms and regulation changes. The question is What does all this mean for you? - the second part of the theme is all about social equity and inclusiveness then technically it is all about you!

An Appraisal of World Environment Day and Water Use Efficiency: An overview shows that the theme of W E Day 2004 was Wanted! Seas and Oceans – Dead or Alive ? It asked all of us to make a choice as to how we want to treat Earth's Seas and Oceans. The question is do we want to keep Seas and Oceans Healthy and Alive or Polluted and Dead . Polluted and Dead Seas have serious adverse impacts on Marine Environment and Health and Livelihood of Communities directly depending on Marine and Coastal Resources. If Seas and Oceans are Dead, the very existence of Humanity is in danger. It calls on Each and Every one of Us to be alive to these Realities and to Act.

Review of the state of art shows that 70% of Earth's Surface is covered by Oceans and more than 90% of Planet's Living Biomass is found in Oceans. 75% of World's Mega cities are located by the Sea and 40% of World's population now lives within 60 KMs of Sea coast. More than 3.5 Billion People depend on the Ocean for their primary source of food. Although Coral Reefs comprise less than 0.5% of Ocean floor, more than 90% of Marine Species are dependent on them. Tropical Coral Reefs border the Shores of 109 Countries and significant Reef Degradation has occurred in 93 countries. Average Sea Level has risen between 10 to 25 cms in the past 100 years. If all the World's Ice melted, Oceans would rise by 6.6 meters. High Seas (Beyond National Jurisdiction) cover all most 50% of Earth's Surface and they are least protected.

Main Threats to Seas and Oceans comes from over fishing activities and pollution from both sea based and land based activities. More than 70% of Marine Fish stocks are now being harvested faster than they can reproduce, making it unsustainable. Commercial destructive Fishing Practices are killing hundreds of thousands of marine species each year and destroying important undersea habitats. Because of Climatic change and Polluting activities, total global fish catch is declining. 95% of World Fish catch is from Near-Shore Waters and 90% of the World's Fishermen and Women operate at small-scale local level, accounting for 50% of catch. Livelihoods of Traditional Fishing Communities, who harvest half of world's fish catch, are increasingly threatened by Illegal, Unregulated or Subsidized Commercial Fleets. Commercial Inland Shrimp Farming, which is highly destructive, is being resorted to.

Pollution from Ocean based Activities show that Oil Tankers, transport 60% of oil consumed in the world and an average of 600,000 barrels of oil a year accidentally spilled. An estimated 21 million barrels of oil run into Oceans each year from street run-off, effluents from industry and from ships flushing their tanks. Each year 10 billion tons of ballast water is transferred around the globe and released into foreign waters.

Pollution from Land Based Activities show that 80% of all pollution of Seas and Oceans comes from land based activities. It is not just coastal Dwellers, Tourist Activities and Industries that pollute the oceans. Rivers that run into Sea carry silt, untreated or under treated sewage, industrial waste and the assorted rubbish of consumers from far inland. Each year tons of discarded Plastic products find their way into the Oceans, killing hundreds of thousands of ocean going birds and other Marine Species. The Plastic Waste is not only Deadly, it is Persistent. The Animals killed by Plastic waste decompose, but the Plastic does not. It remains in

Ecosystem to kill again and again. Adding to the Ocean's owes are surplus Agricultural Fertilizers and Pesticides run-offs, which are creating a growing number of coastal Dead Zones.

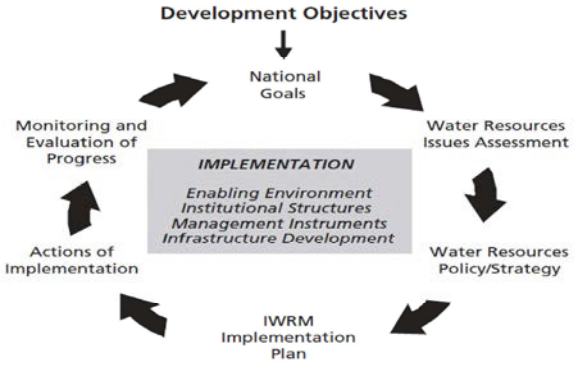
Data on Threat to Marine Life and to Human Health and Livelihoods shows Death and disease caused by polluted coastal waters, costs the global economy US$ 12.8 billion a year. Annual economic impact of Hepatitis from tainted seafood alone is US$ 7.2 billion. Plastic waste kills up to one million sea birds, 100,000 Sea Mammals and countless fish each year. Harmful algal blooms, caused by an excess of nutrients – mainly Nitrogen from fertilizers- created nearly 150 coastal deoxygenated "Dead Zones" worldwide, ranging from 1 to 70,000 square kilometers. Mangroves providing nurseries for 85% of Commercial fish species in the tropics are being destroyed. The communities, who depend on Marine and Coastal resources are being deprived of their livelihoods.

Pollution Prevention and Control shows that the existing Environmental Protection and Natural Resource management is generally focused on land resources and ecosystems. The significant potential of coastal and marine resources for sustainable development has been ignored. Coastal Area Development Regulations to some extent aim at integrated development of coastal areas, ecosystems and resources of the land-sea interface. This is aimed to improve the quality of life of the communities dependent on coastal resources and helping coastal areas attain sustainable development. While provisions of Original CRZ Notification dated 19-2-1991, are still to be implemented in their true spirit, a number of amendments have been brought about, severely diluting the provisions and rendering the very spirit behind the Notification lifeless.

Environmental Status of Libyan Coast: Libya has 2000 km coast line. All most all Mangroves Have been destroyed. Untreated and Under treated Domestic sewage and industrial effluents being discharged into Sea. Coastal Road is undertaken in violation of CRZ. Cement Projects will have serious adverse impact.

Precautionary Principle requires adoption of Risk based approach asks "how much damage is acceptable or can we get away with?"The system sets numerical limits to allow that much damage to occur, but we end up with more than acceptable damage. Under Precautionary Principle we ask "how little damage is possible?. Precautionary system urges a "Better Safe Than Sorry" approach decisions. Seas are polluted when relationships between Plankton and Light, Plankton and other Marine Organism and Sea Bed and Surface are damaged. The message is let us not play with Seas and Oceans as "Life on earth is sustained by the existence of Sea, since life began in Sea about 2.5 billion years ago"

United Nations and Water: UN treats water as a key driver of economic and social development while it also has a basic function in maintaining the integrity of the natural environment. However water is only one of a number of vital natural resources and it is imperative that water issues are not considered in isolation. Both public and private sector managers, have to make difficult decisions on water allocation. More and more they have to apportion diminishing supplies between ever-increasing demands. Drivers such as demographic and climatic changes further increase the stress on water resources. The traditional fragmented approach is no longer viable and a more holistic approach to water management is essential. Figure below shows the rationale for the Integrated Water Resources Management (IWRM) approach accepted internationally as the way forward for efficient, equitable and sustainable development and management of the world's limited water resources and for coping with conflicting demands.



Stages in Iwrm Planning and Implementation: Global overview shows that there are great differences in water availability from region to region - from the extremes of deserts to tropical forests. In addition there is variability of supply through time as a result both of seasonal variation and inter-annual variation. All too often the magnitude of variability and the timing and duration of periods of high and low supply are not predictable; this equates to unreliability of the resource which poses great challenges not only to water managers but also to societies as a whole. Most developed countries have, in large measure, artificially overcome natural variability by supply-side infrastructure to assure reliable supply and reduce risks, albeit at high cost and often with negative

impacts on the environment and sometimes on human health and livelihoods. Many less developed countries and some developed countries, are now finding that supply-side solutions alone are not adequate to address the ever increasing demands from demographic, economic and climatic pressures; waste-water treatment, water recycling and demand management measures are being introduced to counter the challenges of inadequate supply. In addition to problems of water quantity there are also problems of water quality. Pollution of water sources is posing major problems for water users as well as for maintaining natural ecosystems.

Overview further shows that in many regions the availability of water in both quantity and quality is being severely affected by climate variability and climate change, with more or less precipitation in different regions and more extreme weather events. In many regions, too, demand is increasing as a result of population growth and other demographic changes (in particular urbanization) and agricultural and industrial expansion following changes in consumption and production patterns. As a result some regions are now in a perpetual state of demand outstripping supply and in many more regions that is the case at critical times of the year or in years of low water availability.

In summary, IWRM is an empirical concept built up from the on-the-ground experience of practitioners. Although many parts of the concept have been around for several decades - in fact since the first global water conference in Mar del Plata in 1977 - it was not until after Agenda 21 and the World Summit on Sustainable Development in 1992 in Rio that the concept became both the object of debate and practice. The Global Water Partnership's definition of IWRM is widely accepted. It states: 'IWRM is a process which promotes the co-ordinated development and management 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 vital ecosystems.'

Some Salient Un Sponsored Activities for Water Use Efficiency: In 2006 a Task Force on IWRM was created by UN-Water, with members drawn from UN-Water agencies and from partner organizations. In May 2008, the Task Force on IWRM completed its mandate when it presented the 'Status Report on Integrated Water Resources Management and Water Efficiency Plans' at the sixteenth session of the Commission on Sustainable Development. In 2008, UN-Water combined the Task Force on IWRM and the Task Force on Monitoring to establish the Task Force on Indicators, Monitoring and Reporting.

UN-Water Decade Programme on Advocacy and Communication (UNW-DPAC) was first launched in 2010. World Water Assessment Programme (WWAP), DHI Water Policy, UNEP-DHI Centre for Water and Environment was set up in 2009. It helped to set out how to explore some of the practical aspects of the implementation of Integrated Water Resources Management (IWRM). It covers the following aspects: 1) the relevance of IWRM for a number of key development issues, 2) the key characteristics of the concept, 3) the global status of IWRM, 4) practical implementation - the challenges, 5) practical implementation - case studies showing successful applications to problematic management scenarios and 6) how IWRM programmes are being linked with the *Millennium* Development Goals and adaptation to climate change by the setting of achievement milestones.

World Water Assessment Programme (WWAP) report first published by UNESCO-International Hydrological Programme (IHP), 2009 reviews currently available information on cases related to IWRM and Integrated River Basin Management (IRBM. It summarizes these findings with some conclusions and recommendations. *UN-Water. 2008* Report aims to illustrate progress made on meeting the target to "Develop integrated water resources management and water efficiency plans by 2005, with support to developing countries, through actions at all levels" agreed at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, through the Johannesburg Plan of Implementation. The Report is based on a survey covering 104 countries of which 77 are developing or countries in transition and 27 are developed. *Cap-Net, United Nations Development Programme (UNDP)* in 2008 provided a framework of IWRM. The manual provides the necessary general information and specific tools in a user-friendly way so that any water resource stakeholder may be able to resolve existing or head-off impending disputes in a way agreeable to all parties. The emphasis is on Alternative Dispute Resolution (ADR), in particular, principled negotiation - an approach that seeks to embed outcomes and processes that serve sustainable, equitable and efficient long-term social needs.

UN-Water, Global Water Partnership (GWP) in 2007 assisted in preparing statement to support countries in their efforts to improve water management through an IWRM approach and to stimulate the development of a robust framework for monitoring, evaluating and reporting on the outcomes of such an approach. *Cap-Net, United Nations Development Programme (UNDP), Global Water Partnership (GWP) in 2005* prepared a training material for a 3-4 day course on how to achieve a water resources management plan that brings in the principles of IWRM. Useful tools are identified to support the planning process in each step. While the material is targeted for national IWRM plans it is readily adaptable for basin level planning and trainers. *Food and Agriculture Organization of the United Nations (FAO) in 2004* provided a background document that gives a brief overview of the development of the concept of Integrated Water Resources Management. *World Water Assessment Programme (WWAP), UNESCO-International Hydrological Programme (IHP) in 2009 gave* Guidelines to help provide information to help practitioners implement IWRM in line with their own set of circumstances. These guidelines consist of the fundamental concepts of IWRM as well as provide insights into the perspectives of various stakeholders with regard to water issues, keys for success for overcoming problems and good examples where such keys for success were applied. This first publication serves as an introduction to the Guidelines and outlines the main points contained within them. *UNESCO-International Hydrological Programme (IHP), World Water Assessment Programme (WWAP), Network of Asian River Basin Organizations (NARBO) in 2009* issued Part 1 of the Guidelines that provides basic principles of IWRM and explains the benefits of IWRM at river basin level and the need to promote it at the policy level. It also proposes a spiral model of IWRM, which illustrates the evolving and dynamic nature of the IWRM process.

UNESCO-International Hydrological Programme (IHP), World Water Assessment Programme (WWAP), Network of Asian River Basin Organizations (NARBO) in 2009 issued Guidelines for IWRM Coordination' intended for practitioners involved in IWRM coordination. It can be used as introductory guidance for those tackling IWRM for the first time, or as training material for intermediary practitioners and trainers of IWRM. For IWRM experts, it can be used as a reference guide to tackle the various issues and problems they face in their IWRM activities. *UNESCO-International Hydrological Programme (IHP), World Water Assessment Programme (WWAP), Network of Asian River Basin Organizations (NARBO). In 2009* also issued Guidelines for Flood Management. It' is intended for IWRM practitioners of flood management. It is recommended to be used as introductory guidance for those tackling IWRM for the first time, or as training material for intermediary practitioners and trainers of IWRM. For IWRM experts, it can be used as a reference guide to tackle the various issues and problems they face in their IWRM activities. *UNESCO-International Hydrological Programme (IHP), World Water Assessment Programme (WWAP), Network of Asian River Basin Organizations (NARBO) during 2009* gave good practices for Irrigation Practitioners' on how to tackling irrigation planning. It consists of three parts: 1) sectoral perspectives, 2) key for success and 3) IWRM process. *Cap-Net, United Nations Development Programme (UNDP) in 2008* developed a training material to improve efficiency and effectiveness in the application of integrated water resources management (IWRM) for sustainable management and development of water resources. The training is particularly targeted at the staff of river basin organisations (RBOs).

United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2003 issued a manual as an introduction to the principles underlying the integrated water resources management concept. The focus is on the approaches and management tools that facilitate its application, taking into account the size of the territory, whether it is national and international basins or sub-basins of local interest. This manual is destined first to trainers who, through a national or a regional seminar, would bring the participants to produce a diagnosis of their basin and an action plan. The manual is divided into two sections. The first one, of a more conceptual nature, presents a review of several definitions and some of the most pressing issues related to integrated basin-wide management. The second section of the manual, aimed at training, takes the reader and the trainer through the steps of the management framework.

ACP-EU, United Nations Environment Programme (UNEP), UNEP-DHI Centre for Water and Environment, Global Water Partnership (GWP) published case studies to recognize some of the most common problems experienced in IWRM planning and developing options for overcoming them. Each case study considers the following aspects: 1) problems of water resources

management that need to be addressed, 2) context in which the problems and solutions need to take place, 3) decisions and actions taken in order to execute the roadmap process, 4) outcomes of the decisions and actions taken, 5) lessons learnt that will be of value to others involved in similar situation and 6) relevance of the case to IWRM.

United Nations Economic and Social Commission for Western Asia (UNESCWA) in 2007 made a study to help provide ESCWA member countries with guidelines on how to implement Integrated Water Resources Management national strategies, with particular focus on institutional and legal dimensions. The study: (a) assesses the status of institutional and legislative settings; (b) evaluates the progress towards implementing institutional reforms within IWRM national strategies as well as challenges, constraints and gaps; (c) proposes scenarios for the implementation of legal and institutional reforms; (d) reviews institutional and legislative measures taken by developed and developing countries; and (e) presents a set of recommendations to ESCWA member countries on how to enhance institutional and legal reforms in order to implement IWRM at the national/local levels.

United Nations Economic and Social Commission for Western Asia (UNESCWA) in 2004 presented an overview report that introduces the process of Integrated Water Resources Management (IWRM) to senior policy and decision makers with the aim of mobilizing political and decision support to implement IWRM at the basin, national and regional levels.

Libyan Initiative: Libya based academies, universities, high institutes and Nuclear Research Center has launched reduce, reuse and recycle resources product and services (3Is) initiatives for rebuilding the country to combat climate change impacts induced by 2011 Libyan crisis. On the eve of World Environment Day (5 June 2012) celebrations and conference at Omar Mokhtar University Al Baiyda, the country is engaged in preparing actions, accords, ideas and best practices to mitigate the impact of projected extreme events and weather by considering *low carbon, resource efficient* measures and enhanced use of renewable to tackle impending climate change. A campaign to launch a Green Mountain Conversation strategy in Benghazi to petition against the excavation of mountain faces and the resulting deforestation as hot spots in Libya to convert them to bright spots is the main highlight of the day.

Concluding Remarks: After highlighting, UNEP World Environment Day (WED) 2012 relevance that coincides with first international conference on water resources of Jabal Al Akhdar organized by Omar Al Mukhtar University paper demonstrates that how actions, accords and commitments by 3Is initiative with special reference to water resource efficiency are being debated by using awareness and preparedness for environmental emergencies at local level (APELL) along with numerous both Libyan and UNEP priority initiatives and programs. Based on case studies to recognize some of the most common problems experienced in IWRM planning and developing options for overcoming them a set of recommendations on how to enhance institutional and legal reforms for its implementation at the national/local levels are briefly outlined. Finally it shows that how lessons learnt and best practices especially from UN agencies are assisting to promote water resource efficiency and sustainable consumption and production of water in Libya for its wider application in both developed and developing countries.

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