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Harmonization for protection of the Quality of Shared Water Resources in the ESCWA Region

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ABSTRACT

Information retrieved from national environmental reports indicates that water quality in most of ESCWA Member States (ESCWA-MSs) is either poor or deteriorating, entailing the existence of serious local and even across the border pollution problems. In response to the ever-increasing water pollution, there is an emerging need in ESCWA-MSs for improving coordination of neighboring water quality protection systems, and harmonizing water quality standards and regulations for pollution control. Many rivers in the ESCWA region flow from one ESCWA-MS territory to another. In addition, there are some shared groundwater basins with huge groundwater reservoirs in the region, among which are the Nubian Sandstone and the East Arab Peninsula Basins. ESCWA-MSs should strive together to prevent the deterioration of water quality in their shared water resources.

Controlling the quality of those shared water resources in the region can be achieved by undertaking some bilateral, multilateral, subregional, and /or regional cooperation and coordination measures. Such measures comprise some harmonization tasks like the harmonization of ambient water quality standards, of monitoring and evaluation regulations and procedures, and of guidelines for wastewater management. It is also important to establish harmonization among different steps of data management, different disciplines and agencies involved, and different countries.

In order to achieve a harmonious framework for water pollution protection, it is fundamental first to develop and agree on a cluster of regional water quality standards and pollution regulations to be used as a platform for ESCWA-MS to accede and harmonize with. Second to this step comes the process of harmonization that will ensure complete alignment of national water quality standards in ESCWA-MSs with the adopted standards and regulations. A suggested modality for harmonization of water quality management in ESCWA-MSs comprises 4 actions to be undertaken. The first action consists of initiation of harmonization by ESCWA-MSs through their Inter-Governmental Committee on Water (IGCW), to promote the convergence of national water standards. The second action comprises the establishment of Shared Water Resources Commission (SWRC) whose functions are to describe the objectives of cooperation and harmonization among respective contracting parties, and to form three consecutive task forces to perform primary research, advising, and drafting functions. The third action in the suggested modality consists of identifying the role of national governments in the process of harmonization. In this connection, the main function of national governments is to establish three national task forces

to respectively control, institutionalize and monitor the adopted harmonized standards and regulations. The last action involves the dissemination of information through publication of surveys, annual reports on state of transboundary water quality, and discharge data. The task of harmonizing environmental standards of the water sector in ESCWA-MS is likely to be faced by three groups of difficulties. The first of these groups is connected to the fact that a significant portion of the water resources in ESCWA-MS is received from outside the region. The second group of difficulties is related to the harmonization process itself, and might include complex issues such as the specificity of water resources endowments and preferences of each ESCWA-MS, setting the acceptable upper and lower limit standards, and different technical approaches in predetermining the agreeable standards and risks. The third group of difficulties is associated with the capacities of the national and local water resources agencies and authorities, required to implement, monitor, inspect, and enforce compliance with harmonized water quality standards.

I- INTRODUCTION:

Regardless of the eventual future increase in fresh water demand during the next decades in the ESCWA region, the prime concern of water authorities is not the overall supply in quantitative terms, but the continuous degradation in the quality of the currently available limited resources. Information retrieved from national environmental reports in most of ESCWA Member States (ESCWA-MSs) indicates that water quality is either poor or deteriorating. This entails the existence of serious local and even across the border pollution problems in some cases. In response to the mounting urban and industrial impact on the quality of water resources during the last decades, qualitative protection of aquatic environment became a predominant issue in the region.

The discharge of raw or partially treated municipal sewage to surface fresh waters is of diminishing importance in most of ESCWA-MSs particularly in urban areas. However, this practice is far from being eliminated in most of the rural areas in the region. Chemical pollution resulting from small scale and intermediate industries still discarding their wastes on land and water, and from farms using excessive amounts of pesticides and fertilizers, is a concern common to almost all countries of the region. Furthermore, the introduction of modern industries with their associated toxic chemical wastes has constituted a serious threat that can no longer be neglected. At the national levels, this problem does not yet appear to have been successfully brought under complete control anywhere in the region. Awareness of diffuse (non-point) sources of pollution is also augmenting.

The general issue of particular importance to ESCWA-MSs in general and to Gulf Cooperation Council (GCC) region in particular, is the growing threat of contamination of ground water resources. Once ground waters are polluted, it is extremely difficult and costly to clean them or even to stop the spread of contamination. Water in aquifers traverse slowly taking decades before pollutant are being detected or felt. Moreover, due to the connection between ground and surface waters, both resources may eventually become polluted. In general, ground water contamination is often long-term cumulative process; thus it is more serious than surface water pollution. Rehabilitation requires extensive time periods and is sometimes impossible. Inevitably, water pollutants traversing on surface or underground do not recognize any political boundaries.

Many pollutants, once released to a fresh water body, are transported for long distances within the ESCWA region as well as to and from it. The distance a pollutant can traverse depends on many factors, including its

physical and chemical characteristics, the location of the point sources and the volume of discharge. In case of discharge of pollutants to a fresh surface water body, the hydrological pattern, circulation, flow, etc. are important factors in the transport and transformation of the pollutants. In case of ground water both the aquifer and soil characteristics influence the fate and transport of the contaminants. Evidently, pollutants that have been transported long distances either on the surface or underground are frequently beyond the control capacity of any one country. While some shared water quality problems can be effectively addressed by bilateral efforts; there are others that, because of the distance they travel, inevitably require multilateral, sub-regional and some times regional attention. Furthermore, the impact of a member state discharge on its neighbors cannot always be predicted earlier. Aquatic chemistry associated with the discharged pollutants is very complex, as are the pathways through which they traverse, and it is usually very difficult to predict the ultimate human health and ecological implications of any given discharge. It is therefore safe to assume that shared waters do not lend themselves to purely national approaches because natural phenomena and human activities, including effects originating beyond the bordering area itself, may make themselves felt across boundaries, and require co-operation among ESCWA neighboring countries.

The aforementioned imperatives necessitate domestic action on the part of each country in ESCWA region and increased collaboration at the bilateral, multilateral, sub-regional and regional levels to harmonize water quality standards and regulations for pollution control. This is an important step towards a shared understanding of water quality problems as well as providing the basis on which to develop coordinated actions for water resources protection in the region. There is clearly a need to catalyze important regional, interagency and interdisciplinary cooperation in measuring, monitoring and assessing anthropogenic discharges of pollutants to fresh waters. This can hopefully lead to harmonized discharge inventories, and the generation and utilization of quality information from coordinated monitoring and pollution control programs. In response to the ever-increasing water pollution, the trend around the developed world is towards improved coordination of neighboring water quality protection system. This is based on jointly agreed ambient and discharge water quality standards and exchange of information on, and some times joint assessment of potential across-the-borders consequences of national development projects or activities affecting water qualities. In the event of non-compliance, proposals for the introduction of liability for damage related to transboundary water pollution are even being considered in Europe (ECE, 1989). In order to cooperate and harmonize among different national water quality monitoring and pollution control

systems, there should be significant developments concerning institutional arrangements for the management of bilateral, multilateral, sub-regional or regional agreements among ESCWA-MSs. New arrangements should preferably include provisions for means by which to implement the commitments, inter-alia, by establishing water quality bodies with some scope of authority.

Common to all contractual arrangement among ESCWA-MSs is the obligation that each country must refrain from unilaterally, i.e. without the consent of the other party, carrying out measures or works which would adversely affect water conditions in the territory of the other country. The main objective of the present paper is to provide ESCWA-MSs with a suggested modality to work together, harmonizing standards, sharing information and developing coordinated control regulations and strategies for the protection of their valuable shared water resources.

II- SHARED WATER RESOURCES IN THE ESCWA REGION: (WHY HARMONIZE?)

According to Economic Commission for Europe (ECE, 1988), many European Governments have based their bilateral and multilateral efforts on legal provisions in conventions, treaties and other arrangements in order to prevent and control the pollution of their shared water resources. Similarly, and in light of the regional water resources scarcity, ESCWA-MSs should together strive to prevent the deterioration of water quality in their shared water resources and to overcome problems associated with sustainable development, equitable use and joint preservation of shared water quality. Shared water resources in the region would comprise one or more of the following:

1. River and stream stretches along which ESCWA-MSs borders run.
2. Rivers, streams and ground waters flowing from one ESCWA-MS territory into the territory of another ESCWA-MS and transected by these states borders.
3. Still waters underground and on the surface traversed by ESCWA-MSs borders.

According to ESCWA (1997), the main rivers in the ESCWA region receive 60% of their waters from outside the region. Because of this and of political and economic reasons, the full utilization and development of potential resources of such rivers are nearly impossible. The River Nile crosses nine non-ESCWA countries in addition to Egypt. The length of the Euphrates is some 2330 km. where 28% of the basin is situated in Turkey, 17% in Syria, 40% in Iraq and 15% in Saudi Arabia. Iraq, Turkey

and Iran share the Tigris River Basin. The Dan, Banias and Hasbani Rivers form the headwater of the Jordan River. The point of confluence of the headwater tributaries is about 4 km. south of the northern borders of Palestine occupied territories. Syria, Lebanon, Jordan and Palestine share the river basin. The Orontos River Basin originates in Lebanon and is shared by Syria.

In the ESCWA Region, there are shared groundwater basins, which vary in range of their geographic extensions. The most important shared basins with huge groundwater reservoirs are:

1. East Mediterranean Basin: This basin covers an area of 48,000 km² extending throughout Syrian Arab Republic, Lebanon, Jordan and Palestine.
2. Horan and Arab Mountain Basin: This covers an area of 15,000 km² extending throughout Syrian Arab Republic, Jordan and Saudi Arabia.
3. East Arab Peninsula Basin: This basin covers an area of 1,600,000 km² extending throughout the Arabian Gulf, Syrian Arab Republic, Iraq, Jordan and Yemen.
4. Nubian Sandstone Basin: This basin covers an area of 2,000,000 km² extending throughout Egypt, Libya, Sudan and Chad.

III- HARMONIZATION ISSUES FOR CONTROLLING THE QUALITY OF SHARED WATER RESOURCES IN THE ESCWA REGION: ***(HARMONIZE WHAT?)***

As far as water quality control and pollution prevention along frontiers is concerned, bilateral, multilateral, sub-regional and/or regional cooperation and coordination measures between contracting ESCWA-MSs might include one or more of the following issues for harmonization:

1. Harmonization of ambient water quality standards and criteria
2. Harmonization of regulation for water pollution prevention
3. Harmonization of procedures for monitoring and evaluating water quality
4. Establishment of comparability and harmony in reporting water quality monitoring results and in mutual information exchange on water pollution control.
5. Establishment of compatibility and harmony of water quality management and planning of shared water resources, including elaboration of water quality forecasts.
6. Harmonization of guidelines for wastewater management and installation of sewage treatment plants.

7. Coordination and cooperation in technical research associated with protection and monitoring of water resources.

It is also important to note that harmonized control and monitoring for water quality in the ESCWA region should be evaluated within an integrated data management system. The process of data collection involves a number of activities that include not only the harmonized monitoring systems, but also harmonized physical sampling and analysis methodologies, harmonized data processing, data storage, data analysis, data interpretation, and dissemination of information. According to Harmancioglu et. al. (1998), a major consideration is the establishment of harmonization among different steps of data management, different disciplines and agencies involved, and different countries so as to ascertain availability and comparability of data. This issue will require standardization not only in water quality monitoring principles but also in the other stages of data management.

IV- SUGGESTED MODALITY FOR HARMONIZATION OF WATER QUALITY MANAGEMENT IN THE ESCWA REGION: ***(HOW TO HARMONIZE?)***

The suggested modality is chiefly based on successful efforts and lengthy experience accumulated in Western Europe and reported by the Commission for the European Union (1998) and the Economic Commission for Europe (1993 and 1996).

In order to achieve harmonious framework for water pollution protection, it is obviously fundamental, first, to develop and agree on a cluster of regional water quality standards and pollution regulations to be used as a platform for ESCWA-MSs to accede and harmonize with. Conceptually, ESCWA-MSs would play a pivotal participatory role in initiating, developing and agreeing on this core of water quality standards and pollution control regulations with technical support provided by ESCWA and possibly other concerned regional organizations. However, the major challenge ahead appears to be the means of increasing the compatibility of national water quality standards and pollution control regulations to conform to the core of environmental standards and regulations to be adopted by ESCWA-MSs at the regional level.

Second to the development and adaptation of regional water quality standards and pollution control regulations comes the process of harmonization. It is the objective of the harmonization process to ensure the complete alignment of national water quality standards and pollution control regulations in ESCWA-MSs –and the corresponding

administrative systems- so that they totally comply with the adopted standards and regulations in the ESCWA Region.

It is important to note that the road to full harmonization of water quality and pollution control regulations in the ESCWA region is very long and probably thorny. However, the benefits for the public health, the natural environment, the quality of life in general and the economies of ESCWA-MS in particular will, by far, outweigh the efforts, which have to be made in order to reach the ultimate goal.

Figure 1 is a flow diagram of the suggested modality for the harmonization of water quality standards and regulations in the ESCWA region. The preliminary suggested modality might entail the following sequence of actions:

IV-1- ACTION # 1: Initiation by ESCWA-MS Through their Inter-Governmental Committee on Water (IGCW):

The function of ESCWA-IGCW is to provide the forum and prepare the ground for joint activities of ESCWA-MS to promote the convergence (later harmonization) of water standards, regulations, policies and strategies for the protection and equitable utilization of shared water resources in the region. The IGCW should be able to identify the shared water resources and the specific ESCWA-MSs to be involved in each process of harmonization.

IV-2- ACTION # 2: Establishment of Shared Water Resources Commission (SWRC):

The function of the commission is to describe the objectives of cooperation and harmonization among respective contracting parties (specific ESCWA-MSs sharing the same water resource) regarding protection of water quality in transboundary waters. It should also provide details on consistent water quality parameters to be regularly measured or on related technical issues important to water quality management, monitoring and evaluation of transboundary pollution. The commission will have the responsibility of forming three consecutive Task Forces (TF) to perform research, advising and drafting as elaborated below.

IV-2-1- Task Force # 1: Research Functions:

Arranging for and carrying out relevant research to determine the nature, importance and origin of across the border pollution and to analyze the results. This might entail the collection and interpretation of the following information:

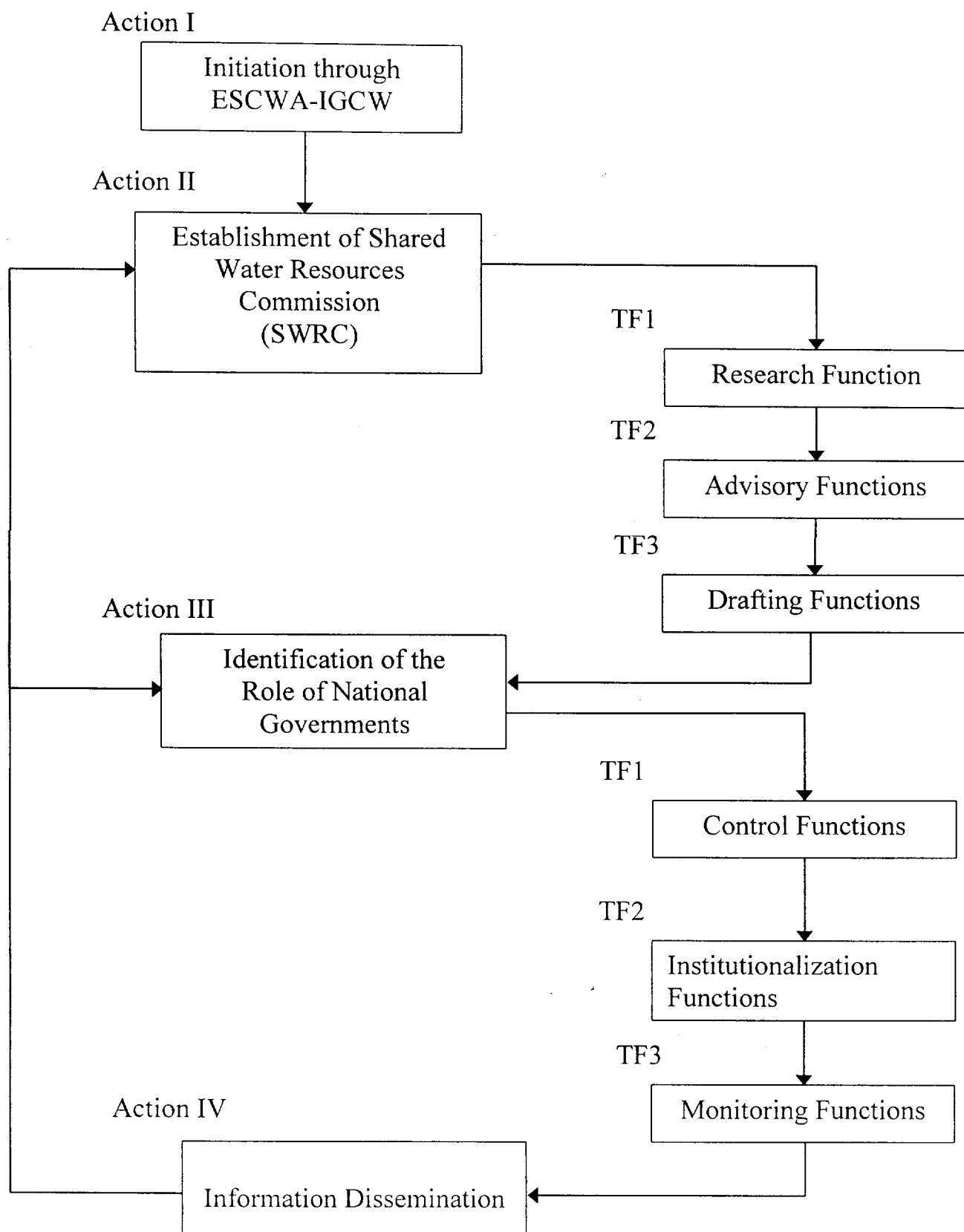


Fig 1: Preliminary Suggested Modality for Harmonization of Water Quality Standards and Regulations in the ESCWA Region

1. Inventories of current and potential new water uses in the shared water resource
2. Inventories of emission sources including point and non-point sources, and sites of production, use, storage and disposal of hazardous substances which could accidentally be discharged into the shared aquatic ecosystem.
3. Results of water quality monitoring and/or quality assessment classification.
4. Surveys of specially protected waters such as drinking-water reservoirs and groundwater.
5. Results of hydrological measurements and related information (e.g. run-off, hydraulic characteristics of water bodies).

IV-2-2- Task Force # 2: Advisory Functions:

Suggest harmonized water quality objectives and criteria, and recommend measures to prevent and control across the borders pollution and to remedy existing grievances, including control ordinances or rules governing wastewater treatment. Water quality objectives aim at ensuring the multi-purpose use of shared fresh water resource, i.e., its use for drinking water supply, livestock watering, irrigation, fisheries, recreation and other purposes, while supporting and maintaining aquatic life and/or functioning of aquatic ecosystems. A major advantage of water quality objectives approach is that it focuses on solving problems caused by conflicts between the various demands placed on waters by different countries sharing the same water resource.

The existing water quality of the shared water resource, the urgency of control measures, prevailing political, economic and social conditions of the member state, will largely influence the duration of a time schedule (grace period) for attaining the harmonized water quality objectives, criteria and requirements.

In the ESCWA region it is always preferred to adopt the step-by-step approach by setting the quality of the shared water resources at two levels. One level represents the ultimate objective at which no adverse effects on the considered human water uses would occur and functions of the aquatic ecosystems would be maintained and/or protected. A second level, which should be reached within fixed time duration, can also be defined. This level is basically a compromise between what is desirable from an environmental point of view and what is feasible from an economic and technical point of view. The second level fits in a step-by-step approach that finally leads to the first level. ESCWA-MSs can also consider the phased approach, which starts with shared aquatic system of sensitive waters and is progressively extended to other water bodies in later phases.

IV-2-3- Task Force # 3: Drafting Functions:

Drawing up conventions or further agreements stipulating precise criteria, standards, methodologies, regulations, codes of conduct, strategies and concrete measures, with a view to intensifying joint efforts to collectively counteract specific problems of transboundary pollution.

IV-3- ACTION # 3: Identification of the Role of National governments in Harmonization:

The first role of each concerned government in this case is to precisely define and evaluate the consequent requirements associated with the regionally harmonized water quality standards and regulation. In this connection it is important for ESCWA-MS to note that the compatibility with regional or sub-regional standards should be implemented in ways adjusted to the unique bio-geo-physical and socio-economic circumstances of each ESCWA-MS. *The ultimate responsibility of the national governments is to take binding measures that fully carry out the letter and the spirit of the regional or sub-regional water quality standards and regulations to harmonize with.* Establishing three national task forces to control, institutionalize and monitor the adopted harmonized standards and regulations are the main functions of national governments in this connection. These aspects can be elaborated as follows:

IV-3-1- National Task Force # 1: Control Functions:

The principal function of this task force is to verify the compatibility of national pollution control programs and the coherence of their objectives as well as examining the extent to which the contracting parties implement the relevant provisions within their competence. This step in the harmonization process is obviously to make a complete and precise assessment of the legislative and administrative gaps at the national levels, which need to be filled in order to, ensure compatibility and compliance with adopted standards.

The task force will start by conducting a comparative analysis of the developed and agreed upon harmonized water quality standards and regulations for the ESCWA region versus the national standards to determine the existing state of conformity. The analysis might also include the most probable national response scenario to the regional and/or global standards.

The initial evaluation consists of a review for the national water quality standards and regulations to examine whether there are any that covers the subject matter. Where there are relevant national standards and regulations, each item of the regional or sub-regional standards and

regulations should be compared to the corresponding item in the national standards and/or regulations. The comparative evaluation of national standards and regulations may lead to the following conclusions:

1. There is no national water quality standard or regulation that corresponds to the agreed regional or sub-regional ones. In this case, national environmental standards and regulations should be adopted with compatibility to regional or sub-regional standards and regulations as a heavy weight function in the selection process. National water quality standards and regulations aimed at harmonizing with regional or sub-regional ones should be first integrated with national water resources protection priorities and principles in a manner which corresponds, to the most possible extent, with the agreed upon regional or sub-regional standards and regulations.
2. The national water quality standards and regulations partially correspond to the adopted regional or sub-regional standards. In which case the government will need to consider gaps which may remain and the best feasible means of dealing with them.
3. The national water quality standards and regulations entirely correspond to the agreed upon regional or sub-regional ones. In such a case the government will conduct a simple assessment for conformity.
4. The national water quality standards and regulations appear to be in conflict with the agreed upon regional or sub-regional ones. In such a case, the analysis should then be followed by a review of options for the modification of relevant water quality standards and regulations (whether to adapt existing ones or to replace them).

IV-3-2- National Task Force # 2: Institutionalization of Harmonized Water Quality Standards and Regulations:

One of the main roles of the participating government is to provide the means to accommodate changes in the national water quality standards and regulations. This might entail the institutional needs and the financing of capacity building for administration and enforcement of the new standards and regulations. Gradual provisions should be used to bring existing shared water resources gradually within the scope of the new regulatory system. The cost and benefit associated with different implementation choices of the new standards and regulations have to be considered. An evaluation of the financing needed for the administration and for investment, in order to be compatible with the regional/global standards should also be carried out.

The second major role of ESCWA-MSs, at the national level, would be the nomination of the competent water authority/authorities that have the licensing, permitting, and enforcement powers under national legislation to assume the overall responsibility for the implementation of the harmonized water quality standards and regulations. In case of fragmentation in implementation capacities, competencies may be divided among several authorities at the same level or at different levels. For example, Ministry of Irrigation and Water Resources may control and monitor sewage water discharges to the water bodies. Local, provincial, and national authorities such as municipalities, local governments, and Ministries of Environment respectively, may all have competence for issuing discharge permits controlling disposal to air and/or land. Moreover, monitoring and enforcement may be partially or wholly delegated to provincial or municipal authorities.

IV-3-3- National Task Force # 3: National Monitoring of Adopted Harmonized Standards and Regulations:

This function involves monitoring the quality of shared water resources and evaluation of transboundary water pollution. These activities should be thoroughly coordinated with countries sharing the same water resource. This coordination can be actualized through the Shared Water Resources Commission. Member states sharing the same ground water basin and/or riparian countries should cooperate when choosing the locations, variables, frequency, etc. to avoid duplication and reduce the monitoring efforts and expenses. Particular attention should also be given to the harmonization of sampling and data processing methodologies and in-situ and laboratory analysis aimed at verifying and validating data on the quality of shared water resources. The harmonization of national monitoring programs operated by countries sharing the same water resource in their respective parts of the catchment areas of transboundary waters or the implementation of joint monitoring programs should be emphasized. In such a case, the main monitoring objectives of transboundary water qualities shall include:

1. The assessment of the actual status of the shared water resource by regular testing for compliance with the regionally adopted and harmonized water quality standards.
2. Testing for compliance with agreed discharge permits and approved levies according to the assimilation capacity of the shared water resource.
3. Verification of the effectiveness of the agreement on the protection of transboundary water resources. This can be achieved by defining the degree of implementation of measures in each member state, by detecting the long-term trends in

concentration and loads and by demonstrating to what extent the targets were reached.

4. Provision of early warning for countries sharing the same water resource to protect the intended water uses in the event of accidental spills.

Experience from Europe (ECE, 1988) indicates that there are only two harmonious and cooperative approaches to monitoring and evaluation of transboundary water pollution as well as interpretation of the findings:

1. The countries sharing the water resource jointly take water samples at sites and dates agreed on in advance. They process and analyze these samples separately in their own national laboratories according to a standardized and harmonized procedure then collectively compare the results.
2. The countries sharing the water resource on their own and within their national infrastructure carry out sampling and analyses of water according to a standardized and harmonized procedure previously agreed upon, then share the results for information, verification, processing and in some cases for publication.

Like sampling and monitoring, the analysis of water samples, interpretation of monitoring results, and evaluation of transboundary water pollution should follow an agreed upon harmonious analytical methodologies, and quality control and insurance programs. In transboundary rivers, sampling should preferably be performed at or near the border crossings (e.g. to be able to show the contribution towards reduction targets per country).

It is the role of the government to ensure the enforcement of the newly adopted or modified water quality standards and regulations at the national level. The government should take all necessary measures to improve the monitoring, inspection and control mechanisms in the water and wastewater sectors. This can be materialized by strengthening their inspection capacities and by taking administrative and judicial measures, in order to ensure that their harmonized water standards and regulations are properly implemented and complied with.

IV-4- ACTION # 4: Information Dissemination:

It involves the publication of surveys, annual reports on state of transboundary water quality, emission and discharge data, statistical data and indicators on water uses affecting water quality.

Adequate information and hopefully public access to it are necessary preconditions for the implementation and enforcement of any agreement signed by the countries sharing the same water resource in the ESCWA

region. The ultimate goal of monitoring should be the provision of harmonized information, not only data. In most of ESCWA-MS, national monitoring programs are not compatible with each other and characterized by the “data rich” but “information poor” syndrome. It is suggested that attention should be directed towards the end product of monitoring i.e., useful information. The identification of information needs principally requires that the concerns and decision-making processes of information users in countries sharing the same water resource are defined in advance. The use of uniform (harmonized) water quality indicators might facilitate the specification of information since they are quantitative and are linked to certain issues.

Countries sharing the same water resource should jointly agree upon the exchange of hydrological and meteorological information and its time scale (e.g. real-time data in emergency situation). The agreed upon information should be comprehensive enough to attain the required reliability of hydrological forecasts, water balances, and water quality management. Member states sharing the same water resource should also develop and utilize harmonized standard protocols in order to allow for more effective data comparisons across time and location and between investigators.

V- DIFFICULTIES ASSOCIATED WITH HARMONIZATION OF WATER QUALITY STANDARDS IN THE ESCWA REGION:

The harmonization of environmental standards of the water sector in ESCWA-MSs might be subjected to three main groups of difficulties as follows:

1. The first of these three groups is connected to the fact that a significant portion of the water resources historically utilized by ESCWA-MSs is received from outside the ESCWA region. This fact is hindering the efforts of ESCWA-MSs in fully controlling and managing the quality of their water resources.
2. The second of these three groups is related to the harmonization process itself. This might include complex issues such as the specificity of national water resources conditions and endowment of each ESCWA-MS, acceptable upper & lower limit standards setting, and technical approaches in predetermining the agreeable standards and risks.
3. The third group of difficulties is more direct and associated with the capacities of the national and local authorities required to properly implement, monitor, inspect and enforce to comply with the harmonized standards.

V-1- Difficulties Associated to the Harmonization Process:

1- Specificity of National Water Resources Endowments and Management Preferences:

During the harmonization process, special attention should be given to the legitimate differences in water quality standards across various ESCWA-MS due to the significant variations in their water resources endowments and their particular national preferences. The specific water resources endowments of a certain country are usually based on the following:

- The natural capacity or sensitivity of ecosystem, land, and water as determined by such factors as climate, rainfall, surface area of catchments, depth of aquifers, land formations and geological location.
- The substantial disparity in the value that citizens place on water quality, in their assessment of relative risk and their approaches to managing the risk.
- The current demand on the water resource as reflected in levels of industrialization, agriculture, urbanization and pollution.

For reasons of both ecology and national sovereignty, water quality standards and regulations will definitely differ from country to country reflecting their relative water quality situation and their collective choices.

2- Setting of Lower and Upper Limits for the Harmonized Standards:

In the first case, lower standards are adopted at the regional level to ensure a fast, easy and maximal national harmonization. This approach might be the only available alternative towards achieving regional agreement on common water quality standards and regulations. Evidently this approach might ultimately lead to some sorts of transboundary water quality deterioration due to the adoption of less stringent standards in some countries of the ESCWA region. For this reason, it is strongly recommended that regional or sub-regional standards should serve as a platform to build upon rather than a ceiling for national water quality standards and regulations.

In the second case (the other extreme), setting higher water quality standards and regulations for the purpose of harmonization can still be considered by some countries in the ESCWA region as an easy excuse to deviate from complying with the harmonized standards agreed upon.

3- Practical Problems of Harmonization:

In addition to differences in water resources endowments and natural resources, countries of the region might also differ in their approaches

and practices in managing their environments. Countries of the ESCWA region might differ on factors such as “safe” levels of pollutants in waters, acceptable purity of water, procedures and uncertainties associated with risk identification and assessment, tolerance levels and the degree of risk acceptable by their communities.

V-2- Difficulties Associated with Implementation Capacities:

Unfortunately, implementation does not occur automatically once harmonization is carried out. Achieving compliance usually involves efforts to promote, encourage, and ultimately compel the behavioral changes needed to achieve compliance. Scarcity of technical and human resources will make it difficult for some ESCWA-MSs to harmonize and enforce strict levels of water quality standards and regulations.

The main stumbling blocks to face implementation of harmonized water quality standards and regulations in ESCWA-MSs are the predominant lack of enforcement capacities and coordination among local and national competent water resources and environmental agencies.

The most common pragmatic procedure for effective implementation, enforcement and compliance with harmonized water quality standards and regulations at the national levels includes the following:

1. Issue the required water quality requirements (harmonized standards, regulations, acts, procedures, codes of conduct, etc.).
2. Promote compliance through communication of these requirements by publication of relevant information, consultation with affected parties, provision of technical assistance to affected parties, etc.
3. Enforce the adopted water quality standards and regulations through the following:
 - Development of the national inspection capacities, credible monitoring, and accredited measuring systems to verify compliance,
 - Preparation of procedures for investigations of violations and rules for assessment of penalties,
 - Identification of the measures taken to compel compliance without resorting to formal court action, and
 - Development of measures to compel compliance through court action.

The main difficulties that might hinder the national implementation of future harmonized water quality standards and regulations in the ESCWA region include one or more of the following elements:

1. Lack of water quality information, database, and inventories on industrial and urbanization processes and their associated effluent discharges to the aquatic environment.
2. Fragmentation of environmental authorities controlling water quality aspects of municipalities, industrial and agriculture production in ESCWA-MSs.
3. Lack of national expertise in the areas of health and environmental risk assessment of discharged chemicals; identification of their potential toxicological and environmental effects; identification of their technological control measures; and development of environmental management systems.
4. Inadequate water quality environmental laboratories needed for the characterization of ambient water quality, discharged pollutants and their potential transport and transformation in the natural aquatic environment.
5. Lack of experience in the assessment of total pollution loads discharged or released from various point and non-point (diffuse) sources.
6. Lack of expertise in mathematical simulation modeling to project the transport, dispersion, and dilution of the discharged pollutants, to propose threshold limits for disposal.
7. Lack of experience in relating discharge loads to impacts on ambient aquatic environment and to define its assimilation capacity.

VI- PROSPECTS OF HARMONIZING WATER QUALITY STANDARDS AND REGULATIONS IN ESCWA-MS:

Based on the given discussion it is projected that the exercise of harmonizing water quality standards and regulations in ESCWA-MSs will be subject to the following controversial aspects:

VI-1- Positive Aspects That Might Facilitate Harmonization in ESCWA-MSs:

1. The lack or near absence of discharge and operational standards particularly for industrial wastewater in some ESCWA-MSs will render the process of harmonization easier for these specific countries. This will put them in a better position whereby they can adopt new standards that are easily compatible with globally recognized water quality standards from the beginning, without going through the agony of reformulating and amending old standards.

2. Due to the lack of technical and institutional capacities, most of ESCWA-MS have adopted standards formulated by international organizations such as WHO, ISO, FAO, etc. On the other hand, other member states have adopted regional standards such as European Union (EU) and OECD standards, while others also considered either Canadian and/or American standards developed and implemented by national competent authorities such as United States Environmental Protection Agency (US-EPA), Canadian EPA, etc. Fortunately, it is recognized that most of these water quality standards are acceptable and compatible with prevailing regional and sub-regional standards for the purpose of harmonization.
3. Several countries of the ESCWA region have developed experience in harmonization with prevalent global and/or regional water quality standards. This experience was mostly developed during the initiation, negotiation, approval and implementation of large-scale water and irrigation projects funded by international donors such as the World Bank, European Bank, Development Banks, etc.

VI-2- Negative Aspects That Might Hinder Harmonization in ESCWA-MSs:

1. The awareness surrounding the need for harmonization of water quality standards as a fundamental means to protect transboundary water resources is insufficient among decision-makers in the ESCWA region.
2. The role of both central and local governments in the ESCWA region in carrying out the harmonization process is ill defined.
3. The capacity needed either technically or institutionally to perform such a task is not well pointed or clear and the required budget might be difficult to justify.
4. Harmonization with regional standards is always questionable by most developing countries. The suspicion of being manipulated by others will always remain as a stumbling block towards harmonization.
5. The legal systems specifying the requirements needed for national monitoring and enforcing compliance with harmonized water quality standards are insufficient. This inadequacy encompasses both the acceding process and implementation procedures in ESCWA-MSs.

6. The capacities either technical or in human resources of the competent environmental and water quality authorities are usually inadequate to carry the extra duty of harmonization.

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