National and Regional Water Resource Assessments

1977

“Mar del Plata Action Plan – RECOMMENDATIONS
A. Assessment of Water Resources
In most countries there are serious inadequacies in the availability of data on water resources, particularly in relation to ground water and water quality. Hitherto, relatively little importance has been attached to its systematic measurement. The processing and compilation of data have also been seriously neglected.

To improve the management of water resources, greater knowledge about their quantity and quality is needed. Regular and systematic collection of hydrometeorological, hydrological and hydrogeological data needs to be promoted and be accompanied by a system for processing quantitative and qualitative information for various types of water bodies. The data should be used to estimate available precipitation, surface-water and ground-water resources and the potentials for augmenting these resources. Countries should review, strengthen and co-ordinate arrangements for the collection of basic data. Network densities should be improved; mechanisms for data collection, processing and publication and arrangement for monitoring water quality should be reinforced.

To this end, it is recommended that countries should:

a) **Responsible agency, Data management**
   Establish a national body with comprehensive responsibilities for water-resources data, or allocated existing functions in a more co-ordinated way, and establish data banks for the systematic collection, processing, storage and dissemination of data in agreed formats and at specified intervals of time:

b) **Hydro/met network, Data management ***
   Expand and extend the network of hydrological and meteorological stations, taking a long-term view of future needs, following as far as possible the recommendations of the United Nations specialized agencies on standardization of instruments and techniques and comparability of data, and use existing meteorological and hydrological data series for the study of seasonal and annual fluctuations in climate and water resources. Such analysis could also be used in the planning and design of networks;

c) **Groundwater network, Data management ***
   Establish observation networks and strengthen existing systems and facilities for measurements and recording fluctuations in ground-water quality and level; organize the collection of all existing data on ground water (borehole logs, geological structure, and hydrogeological characteristics, etc.) systematically index such data, and attempt a quantitative assessment so as to determine the present status of and gaps in knowledge; increase the search for, and determination of, the variables of aquifers, with an evaluation of their potential and the possibilities of recharge;

d) **Standardize data processes and publication across institutions**
   Standardize and organize as far as possible the processing and publication of data so as to keep the statistics up to date and take advantage of the observations made in stations operated by different institutions;

e) **Water quality, quantity, and landuse**
   Include consideration of diseases associated with water as an integral part of water assessments and the consideration of the interrelationships of water quality, quantity, and land use;

f) **Periodic assessments of surface and ground-water resources ***
   Make periodic assessments of surface- and ground-water resources, including rainfall, evaporation and run-off, lakes, lagoons, glaciers and snowfields, both for individual basins and at the national level, in order to determine a programme for investigation for the further in relation to development needs; intensify programmes already under way and formulate new programmes wherever needed;
4_MardelPlata_Action_Plan.doc

g) Modern technology-remote sensing, nuclear, geophysical, models
Provide the means for national mechanisms so established to use, as appropriate, modern technologies (remote sensing, nuclear methods, geophysical techniques, analogue and mathematical models) in collection, retrieving and processing data on the quantity or quality of water resources; manual data-processing methods may still satisfy the simple requirements of small collections, although it may be necessary to introduce various degrees of automation, ranging from small punch-card machines to large electronic computing systems;

h) Standardized measurement techniques (international)
Standardize measurement techniques and instruments, and automate stations as appropriate; reference should be made to international standards and recommendations adopted by Governments through various international organizations;

i) National contributions to international programmes
Support and promote national contributions to regional and international programmes on hydrological studies (e.g. the International Hydrological Programme and Operational Hydrological Programmes);

j) Shared water resources, data co-operation
Co-operate in the co-ordination, collection and exchange of relevant data in the case of shared resources;

k) Increase financial resources
Appropriate substantially increased financial resources for activities related to water resources assessment and to establish or strengthen related institutions and services as necessary;

l) Training
Establish or strengthen training programmes and facilities for meteorologists, hydrologists and hydrogeologists at professional and subprofessional levels;

m) Mineral and thermal water
Prepare an inventory of mineral and thermal waters in countries possessing such resources with a view to studying and developing their industrial potential as well as their use as spas;

n) Aerological observations for atmospheric water budgets
Develop methods for the estimation of available water resources using aerological observations for the computation of the atmospheric water budget in large river basins, rivers and continents;

o) Multidisciplinary teams support planning
Provide for the studying and analysing of hydrological data on surface and ground water by multidisciplinary teams so as to make adequate information available for planning purposes;

p) Forecasting methods
Include the development of forecasting methods in quantitative and qualitative assessment, especially in the developing countries;

q) Water-quality decision making
Include effective decision-making methods in the management of water quality based on techniques of natural quality regulation that have been proved in practice;

r) Country-specific water-quality criteria
Take specific national characteristics and conditions into account in different countries in assessing water quality and establishing water-quality criteria.