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Governance for Integrated Water Resources Management Aiming at Sustainable Development

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Abstract: This paper provides concept definitions and brief discussion of Sustainable Development (SD), Integrated Rural Development (IRD), Integrated Water Resources Management (IWRM), water policy development program and objectives, water strategy, action plan, water governance and criteria for effective water governance including issues, decentralization, participation, public-private partnerships and financing. Planning, investment and top-down vs. participatory decision-making approach to RD and SD are emphasized. Strategy for IWRM, scope of work for preparing policy and strategy for IWRM are proposed. Although progress in water governance and related management areas has been incredibly slow and uneven, there are encouraging signs that water governance reform is taking place in many countries, promoting and facilitating coherent policy frameworks, partnerships, participation and institutional integration instead of fragmentation. Water governance will be improved by raising the political will to overcome obstacles and implement water-related commitments made at Rio and afterwards. Although water reforms are evolving in many countries, much remains to be done to achieve the objectives of integrated approaches, sustainable development of water resources and the delivery of adequate water services. Indeed, there is an urgent need to broaden the horizon of water issues outside the water sector. Macro-economic development, population growth and other demographic changes have greater impacts on water demand than water policy. This emphasizes the importance for water professionals to increase their understanding of broader social, economic and political context, while politicians and other key decision-makers need to be better informed about water resources issues.

Key words: Integrated Water Resources · Management Aiming · Sustainable Development · Jordan

INTRODUCTION

Sustainable Development and Integrated Rural Development: FAO has defined Sustainable Development (SD) as "the management and conservation of the natural resources base and the orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for the present and future generations". Sustainable development which conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable.. The World Bank defines Integrated Rural Development (IRD) objectives as follows: "Improved productivity, increased employment and higher incomes for target groups, as well as acceptable levels of food, shelter, education and health". The main components of IRD are: (i) a number of productive components which facilitate access to inputs through credit, tree planting, soil and water conservation measures, livestock development and rain fed and irrigated agriculture, (ii) rural roads, (iii) water supply, (iv) electrification and communication, (v) education facilities, health centers and housing improvement and (vi) public building, communal centers and small-scale industries.

Integrated Water Resources Management IWRM: The three necessary pillars for water resources management are: economic development, e nvironmental conservation and social stability. IWRM is the appropriate management tool for sustainable use of water resources and for improved

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delivery of water services. The framework for moving towards IWRM requires integrated vision and integrated tools for planning and decision making. The integrated vision consists of social equity, environmental sustainability and economic efficiency. The integrated tools for planning and decision making consist of management instruments (assessment, information and allocation instruments), enabling environment (policies, legislations and governance) and institutional framework (central-local, river basin and public-private). The enabling environment comprises national, provincial and local policies and legislation. These constitute the "rules of the game", which allow all stakeholders to play their respective roles. The "rules of the game" should promote both top-down and bottom-up participation of all stakeholders, from the national level down to the village or municipality or from the level of catchments or a watershed up to the river basin level.

The government's role should be that of an activator and facilitator, rather than top-down manager.

Important aspects of the government's role include formulating national water policies and legislation, enacting and enforcing the legislation and encouraging and scrutinizing the private sector.

In the area of governance and institutional roles, development, financial and human resources, traditional norms and other circumstances will play a large part in determining what is most appropriate. Never the less, institutional development is critical everywhere to the formulation and implementation of IWRM policies. Clear demarcation of responsibilities between actors, separation of regulation from service-provision functions, adequate coordination mechanisms, filling jurisdictional gaps and eliminating overlaps and matching responsibilities to authority and to capacities for action are all parts of institutional development.

Practical management instruments should be developed to help water managers. The art of IWRM lies in selecting, adjusting and applying the right mix of these tools for a given situation. Five categories deserve special attention: (i) Water resources assessment, (ii) Communication and information, (iii) Tools for water allocation and conflict resolution, (iv) Regulatory instruments and Technology.

Policy: Policy is defined as a set of principles or guidelines drawn up by the government to reach national goals and it should be noted that policy formulation is a continuous and interactive process. The policy framework will therefore evolve in the light of experience and as conditions on the ground evolve.

Water policy cannot be formulated in isolation of other water related policies of other sectors such as agriculture. Water policy is needed in order to encourage an efficient and equitable use of the sources. Policy principles have to be converted into the following concrete actions: (i) national comprehensive policies for water resources management must be holistic, integrated and environmentally sound, (ii) institutional strengthening and reform in conjunction with reform of water laws, (iii) IWRM based on dynamic, interactive, iterative and multi-sectoral approaches. Its evolution would embrace spatial and temporal integration, all water-users and would be integral to socioeconomic planning, (iv) policies must deliver what is needed on the basis of clear objectives and informed decision making which should occur at the appropriate level and (v) policies should also provide clear economic and social gains for society as a whole.

The goals of a water policy are: (i) specific recognition that fresh water is a finite and vulnerable resource essential to sustaining life, development and the environment, (ii) full acknowledgement that water has an economic value in all its competing uses and should be recognized as an economic good and (iii) efficient water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels.

The main objectives of a water policy are: (i) development and utilization of production resources with due regard to optimal efficiency, economic return, sustainability and environment protection, (ii) maximization of net returns of producers investment and (iii) production of commodities for domestic, regional and international demand and of competitive quality and prices.

The following activities are needed to achieve these objectives:

- Identify and analyze long-medium-and short-term policy issues
- Prepare policy issue profiles and extended policy issue papers.
- Rank the policy issues in order of priority.
- Design scopes of work for mechanisms leading to policy formulation.
- Develop strategy to address priority policy issues as appropriate
- Prepare action plan to implement this strategy as appropriate.

The main policies to be formulated would include:

- Maximizing the efficiency of water systems and on-farm water application and the economic net returns of water used in projects.
- Conservation of water and soil quality and proper treatment of wastewater for use in projects.
- Immunizing various risks facing producers including production and marketing costs.
- Promoting domestic production of inputs and export of produced commodities.

Water Governance: Water governance includes institutions, decision-making structures, upstream and downstream riparian interests and access to water, diversion of public resources for personal gain, unpredictability in the use of laws and regulations and licensing practices which impede markets and voluntary action and encourage corruption and other forms of rent-seeking behavior. These lead to the following problems: (i) competition for the available water resources, (ii) increasing water pollution and water quality degradation and (iii) water shortages.

All these factors have the following negative and serious impacts:

- Negative impact on the aquatic ecosystem
- Prospects for economic and social development and political stability are seriously affected.
- Several serious water challenges which must come to terms with dwindling water resources, their uneven geographical and seasonal distribution and inadequate allocation of water services.

Water crisis is essentially a crisis of governance and societies are facing a number of social, economic and political challenges on how to govern water more effectively. The way on which societies are organizing their water resources affairs is critical for promoting and supporting sustainable development as an integral part of poverty-focused development strategy.

Sustainable development challenges are at their core a question of both governance and how societies can balance economic and social development with ecosystem integrity. Sound and effective governance of water resources and related services are paramount to facilitating and supporting an enabling environment for IWRM. If we do not change the way in which water is governed, negative development impacts will be even widely felt. Therefore, it is also important to note that much wider governance issues and policies outside the water sector such as agricultural and industrial policies affect water resources issues.

Agenda 21 aimed at a specific target that by the year 2000,national action programs; appropriate institutional structures and legal instruments would be implemented with water use attaining sustainable patterns. This target remains to be fulfilled. It was also stated that subsectoral targets of all fresh water programme areas would be achieved by the year 2025. The increasing focus on water governance, IWRM and demand-driven approaches marks an important shift in how water is being governed in terms of equitable distribution and efficiency. In general, progress has been made in the following three areas:

- The increasing recognition of water governance and required reforms of policies and institutions as the key to sustainable water development, of which the adoption of appropriate legislation, policies and institutions is only a part of the governance issue. Also recognised, the way in which enhanced institutions and policies being established and implemented that matters. The existence of sufficient rules and regulations means little if they can not be effectively enforced, due to power politics, vested interests and lack of funds or the public absence from the decision-making process.
- Reform of water institutions and policies is taking place in many countries to address incoherent water property rights, fragmented institutional structures, inadequate policies and lack of incentives for increased partnerships and participation and various other aspects of water governance. However, progress has been too slow and limited.
- Integrated approaches is widely accepted as the main vehicle or instrument to manage water in more effective ways and the international community has made considerable efforts and progress in increasing awareness of water resources and their management. However, their implementation remains incomplete.

What is water governance?

- Governance refers to relationships that can be manifested in various types of partnerships and networks. A number of different actors with different objectives are involved, such as government and civil society institutions and transactions and national private sector interests. Governance thinking is that development is a task that involves society as a whole and not exclusive domain of governments.

- Governance has ethical implications and political dimensions, preoccupied with questions of financial accountability and administrative efficiency, has broader political concerns related to democracy, human rights and participatory processes with focus on the relationship between the political-administrative systems and the ecological systems.
- Governance is concerned with management and the operation and maintenance of infrastructure and services.
- UNDP defines governance as: "the exercise of economic, political and administrative authority to manage country affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their rights, meet their obligations and mediate their differences". In this particular context, governance refers essentially to the manner in which power and authority are exercised and distributed in society, how decisions are made and to what extent citizens can participate in decision-making processes. As such, it relates to the broader social system of governing as opposed to the narrower perspective of government as the main decision-making political entity.
- Governance of water is perceived in its broadest sense as comprising all social, political and economic organizations and institutions and their relationships in so far as these are related to water development and management.
- Governance is concerned with how institutions rule and how regulations affect political action and the prospect of solving given social problems, such as efficient and equitable allocation of water resources. The rules may be formal (codified and legally adopted) or informal (traditionally, locally agreed and non-codified). Sound and effective water governance systems are crucial to pursuing various sustainable water development and management goals.
- Governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources and the delivery of water services at different levels of society. Governance issues are dependent on properly functioning legal and judicial systems and electoral processes. For example, legislative bodies made up of freely and fairly elected members and representing different parties are important to popular participation and accountability. It is essential that legal and judicial systems protect the rule of law and human rights. Open electoral processes help build political legitimacy. Water reforms that, for example, include decentralization and increased democratization may require constitutional, legal and administrative reforms that enhance the legitimacy and authority of the judiciary and legislative bodies and executing agencies.

Examples of Water Governance Issues: The water governance issues that need to be addressed and reflected in water policy, law, institutions and management include:

- Basic principles such as equity and efficiency in water distribution and allocation, water administration based on catchments, the need for holistic and integrated management approaches, the need to balance water use between socio-economic uses and uses to maintain ecosystem integrity, etc.
- Clarification of the roles of the government, civil society and the private sector and their responsibilities regarding ownership, management and administration of water resources. Under this heading the following issues will be included: (i)absence of or conflicting water rights legislation, (ii)lack of effective mechanisms for inter-sectoral dialogue, (iii)lack of economic incentives, (iv) fragmentation of water management and administration, (v)lack of mechanisms for the participation of the community or other stakeholders, (vi)role of women in water management, (vii)effects of vested interests,(viii)absence of water quantity and quality standards and (ix)absence of mechanisms for coordination and conflict resolution
- Issues related to IWRM including: (i) inappropriate price regulation and subsidies to resource users and polluters, (ii) inappropriate tax incentives and credits, (iii) over regulation and under regulation, (iv) bureaucratic obstacles or inertia and corruption, (v) conflicting or absent regulatory regimes, (vi) mechanisms to incorporate upstream and downstream externalities (environmental, economic and social) in water planning processes and (vii) mechanisms to resolve disputes

The basic attributes which represent some of the features of effective governance are: Participation, Transparency, Equity, Accountability, Coherency, Responsiveness, Integrative and Ethical considerations.

Development Approach: The success of development approach will depend on: (i) commitment of the national governments and their continued support to the objectives and goals of the action plan/ programme, (ii) coordination of activities in relation to water use and development among countries within a region and between theses countries and regional and international institutions, (iii) adoption of a holistic approach in utilizing water for development taking into consideration technical aspects as well as economic, social, political and cultural factors, (iv) full involvement of farmers during all stages of water planning, development and management, (v) effective involvement of local NGO's and the private sector and (vi) support of the multilateral and bilateral organizations, particularly in terms of technical cooperation, funding and improved coordination of external assistance.

Project sustainability has been affected by many factors among which: (i) choice of agricultural technology has, sometimes, been wrong and not fully accepted by farmers, (ii) after project completion, line agencies have had difficulties in taking over, operating and maintaining project works and (iii) tendency, now, to design simpler projects to be implemented in sequence by different line agencies.

The high cost of new water resource development places a premium on careful planning, evaluation and phasing of investments in water resources development. The government would intend therefore to prepare a National Water Master Plan as a guide to future investment programming with a view as far as possible to meeting long-term water demands in an economically optimum fashion. Projects will be prioritized according to multi-objective criteria. Priority will be given to modernizing and upgrading systems. Given their environmental benefits, wastewater treatment projects would be given high priority and programmes would be developed to utilize treated wastewater in irrigation. Governments should recognize, however, even if full advantage is taken of conservation and reuse programmes; additional water supplies for municipal use will still be required to meet anticipated demands. Given financing and implementation constraints, precedence among new supply projects will be given to projects, which make a significant contribution to meeting rising municipal and industrial demands. Needless to say governments will pursue obtaining their full rights of water resources shared with other countries.

Top-Down Versus Participatory Approach to Development: Basically, there are two contrasting development approaches, namely: (i) top-down approach and (ii) a participatory approach. The former, which is still predominant is characterized by: (a) use of complex techniques which cannot or will not be replicated by farmers, (b) reliance on the skills of expatriate experts and technicians, (c) low priority for training farmers, (d) villagers (men, women and children) employed as laborers and paid with cash and food and (e) often but not always, a considerable reliance on machinery. The participatory approach is characterized by: (a) use of simple and replicable techniques, (b) reliance on the skills and motivation of farmers and (c) high priority for farmer training.

If we want the rural population to apply development techniques to their own land, these techniques should have the following characteristics: (i) they should be simple enough to be mastered by the farmers themselves, (ii) they should be low-cost, otherwise they cannot be implemented, (iii) they should be efficient which means they should have a considerable impact on yields, preferably in the first year and permit a yield from low and erratic rainfall and (iv) they should require minimum maintenance, otherwise total maintenance requirements will be higher than what farmers are able or willing to spend on them..

The success of development programmes depends on: (i) whether people feel the need to improve their land and in turn their livelihood, (ii) selection of the right technical package, (iii) major effort in extension and training (including mass media), (iv) adequate long-term (10-20 years) support programme, (v) minimum harmony in modalities of implementation between donor agencies and (vi) adequate sequencing of development and conservation activities based on local priorities.

Policy and Strategy for Integrated Water Resources Management: Strategy is defined as means or vehicles used to carry out policies. There are three priority action areas for a comprehensive water resources management plan, these are: (i) strengthen the capability of the water agency (Authority, Ministry, etc.) so it can develop and fully implement sound water policies, strategies and programmes for the country and can provide water-related services to the people-its customers-more effectively, efficiently and responsively,(ii) encourage appropriate private sector participation in water resources management and pollution prevention and control,

(iii) get all the water possible from all sources in continuing efforts,(iv) reduce water demand by all feasible means,(v) make water conservation a part of everyday living, an issue of constant awareness throughout the society-among political, public and private sector groups and all the adults and children in the country,(vi) create real incentives to encourage efficient water conservation and to discourage waste and (vii) enforce fully the existing regulations on water use and develop legislations to close the gaps.

Proposed Scope of Work for Preparing IWRM Policy and Strategy: The following questions and issues have to be answered and investigated when preparing IWRM policy and strategy agenda:

Institutional Policy: who manages what in the water sector?

- Define institutional roles, boundaries, complementarities, synergies and working relations.
- Policy coordination and direction: how to make IWRM policy that is formulated and implemented nationally.

Water Pricing Policy: who pays how much for what service?

- Pricing to cover O and M, recover capital costs or pay off loans, reserve for future investment.
- Subsidies: for whom, for how long, at what level.
- Nothing is free! Someone always has to pay. What do subsidies and incentive pricing mean to the nation in the short-and long-run?
- Pricing methods and their implications-economic, financial, technical, social, environmental, etc.

Participation Policy: whose voice is heard?

- Stakeholder analysis-the group, their interests, the impact on them of the policies and implementation measures.
- NGO's and private sector roles in IWRM policy formulation and implementation.
- Water user-irrigators/farmers.
- Water for the poor, water for the rich.
- Distinguishing between national interest and individual/firm interest in IWRM policy formulation and implementation.
- Extension, awareness and advocacy campaigns.

Information Policy: who needs to know what?

- What data is out there? Where is it?
- What are the minimum data needs for IWRM policy makers and implementers.
- Compatibility and comparability.
- Extension services: who provides them, who pays for them, what do they offer?
- Information for implementation, information for IWRM policy decisions and information for planning.
- Monitoring water production and use: how much is enough? Who should do what and report it to whom? Cost/Benefit analysis.
- Units of measure: hydrogeological, administrative, community-based?

Standards, Policies and Guidelines: who needs what kind of water?

- Wastewater uses and guidelines.
- Irrigation approaches-restricted and unrestricted use of water and irrigation methods.
- Environmental standards.

Incentives for and Enforcement of IWRM policy: what and who makes who toe the line?

- Marketing freedom: regulations and defacto monopolies and oligopolies.
- Monitoring and control of groundwater use.
- Using import duty to promote technology, use and development.
- Demand reduction-positive and negative incentives and sanctions.
- Credit policy.
- Conveyance losses-real losses and illicit water use for productive or domestic purposes.

Devolution and Privatization Policy Issues: where is the line between the public and private sectors, between the central government and the local authorities?

- What services can the private sector supply more effectively than the government?
- What services can governorate or municipal services supply better than the central government?
- What are the financial implications of such new arrangements.
- National versus local priorities and interests.
- National versus local resource control.

Investment Policy: what sectors get subsidized?

- Innovative technology for water harvesting (WH), water saving (dualing and/or blending delivery systems, etc.).
- Brackish water desalinization.
- Big Vs.Small Engineering Projects.
- Small technology: micro-storage, improved irrigation, etc.
- High technology or low technology.
- Construction Vs. O and M and rehabilitation.
- Research priorities and funding.

Economic and Social Policy Issues:

- Economic and social cost/benefit analysis.
- Indirect effects of policy decisions.
- Income effects of policy decisions-revenues, fines/sanctions, investment decision and savings decisions.
- Water rights: who owns what water at what point? When does the government give up control? Transfers and trades/sales of water rights.
- The government cannot afford to pay for the water investments, it will have to keep ahead of population growth. Any water policy must be based on a set of economic policies, which promote rapid, substantial and sustainable economic growth for the country.

CONCLUSIONS

The conclusions of this paper can be summarized as follows: Governance is essential for preparing policy, strategy and action plan for implementation of integrated water resources management aiming at sustainable development.

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