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AN INSTITUTIONAL FRAMEWORK FOR WATER within the PALESTINIAN NATIONAL AUTHORITY

Recommendations of a Workshop
Birzeit University 21-24 April 1994

VOLUME 1: SUMMARY REPORT

under the auspices of the
Technical and Advisory Committees
Jerusalem
24/4/94

Supported by UNDP

1. Introduction

The effective management of the water resources of Palestine is essential for the economic and social development of the State; this is particularly critical because water resources are scarce, locally overexploited and in places deteriorating in quality.

At present, water resources are managed by the occupying power. Palestinian institutions are only responsible for the delivery of water and wastewater services. At present, these services are poor, as a consequence of weak institutions and deteriorating infrastructure.

With imminent autonomy, leading to independence, the State must progressively assume full authority for managing all aspects of the water cycle as well as the delivery of water and wastewater services for municipal, industrial and agricultural purposes. In accordance with the Declaration of Principles, the creation of the Palestinian Water Authority (PWA) has recently been announced.

Over the past six months, a small steering group of Palestinian experts[1] has undertaken study tours to Jordan, France and Germany (funded by UNDP) and has prepared proposals for the restructuring of water and wastewater utilities. These findings were incorporated in a report, *Feasibility of the Integration of Water and Sewerage Authorities in Palestine as Regional Utilities* (December 1993), which was submitted to the Palestinian leadership. These same findings were developed further and incorporated in a report commissioned by the World Bank to support the efforts of the Multilateral Group on Water, entitled *Water Conservation in Palestine* (March 1994)[2]. A small workshop was proposed in the December 1993 report, to review and discuss the proposed solutions and recommendations, and was planned for April 1994.

In the light of the creation of the PWA, the Technical Committees were asked to provide advice on the objectives, structure and human resources needed for the PWA. The original workshop objectives were revised accordingly, in consultation with the Technical Committees, and a workshop was held at Birzeit University from 21-24 April,1994, under the chairmanship of the Technical Committees.

This report summarizes the key findings of the workshop, with these findings amplified in the accompanying annexes. It is emphasized that these findings represent an outline institutional framework and much detailed analysis is needed to refine the structure of individual institutional components.

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1 Abdel Karim As'ad (General Manager JWU), Musa Al Khatib (UNDP), Munif Traish (El Bireh Chief City Engineer) and Taher Naser Eddin (Manager, West Bank Water Dept).

2 Center for Engineering and Planning. Authors: Rami Abdulhadi, Abdel Karim As'ad, Karen Assaf, Marwan Haddad, Reinhout Koning, Taher Naser Eddin and Philip Roark.

2. Principles

The workshop recommended that the following principles be adopted in establishing an institutional framework for water management and service delivery:

* given the scarcity of water resources, it is essential to adopt the economists' dictum **"waste is a misplaced resource"** i.e. all wastewater, including stormwater, must be regarded as a potential resource.

* For the same reason of scarcity, **comprehensive and integrated management** of **all water**[3] is essential; i.e. **all water** must be allocated, in terms of quantity and quality, to optimize efficient use and reuse for maximum social, economic and environmental benefit.

* It is essential to separate institutionally the regulatory functions of licensing and monitoring from the service functions of delivery and discharge, thus separating the potential prosecutor and defendant (El-Khassem wa El-Hakam).

* To ensure **accountability to consumers**, they should be represented within both the regulatory and service delivery elements of the institutional framework; this lack of community participation, due to the occupation, is one major cause of the present institutional weakness.

* The institutional framework must provide **appropriate linkages** to other sub-sectors, in particular to municipal and industrial liquid and solid waste management, storm drainage and irrigation.

* The new institutional framework must **build on existing institutions** to the extent possible, providing opportunities for progressive upgrading, retraining and expansion, in order to improve service delivery capacity.

* The institutional framework must be **flexible,** to allow ready adaptation to evolving circumstances and requirements.

3. Institutional Framework

With these principles as a foundation, the workshop developed and recommended a future institutional framework (figure 3), and detailed functions. Given the present inadequate institutional arrangement (figure 1), which would make an immediate change to the permanent framework impossible to achieve, an intermediate stage

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[3] **all water** is used throughout the text to represent water in all its forms: fresh and brackish water, wastewater and urban stormwater.

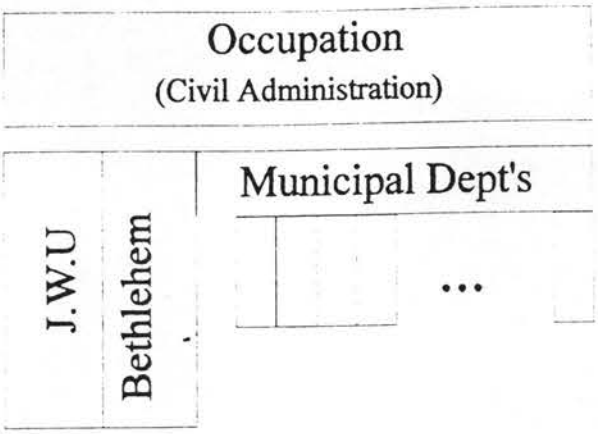

Fig. 1. Present Institutional Framework

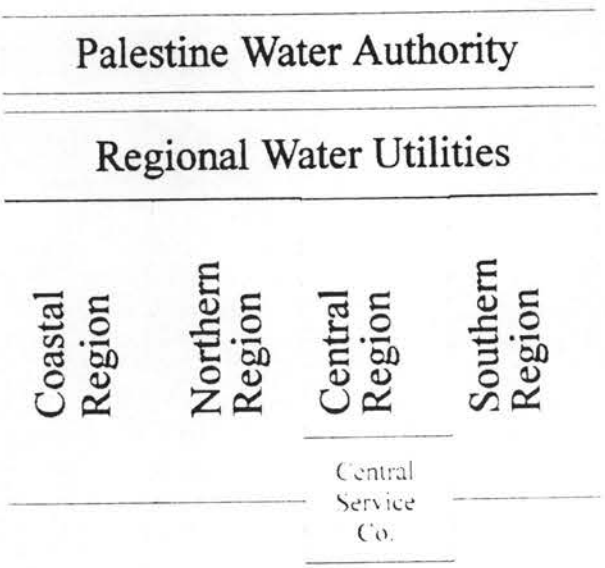

Fig. 2. Transition Institutional Framework

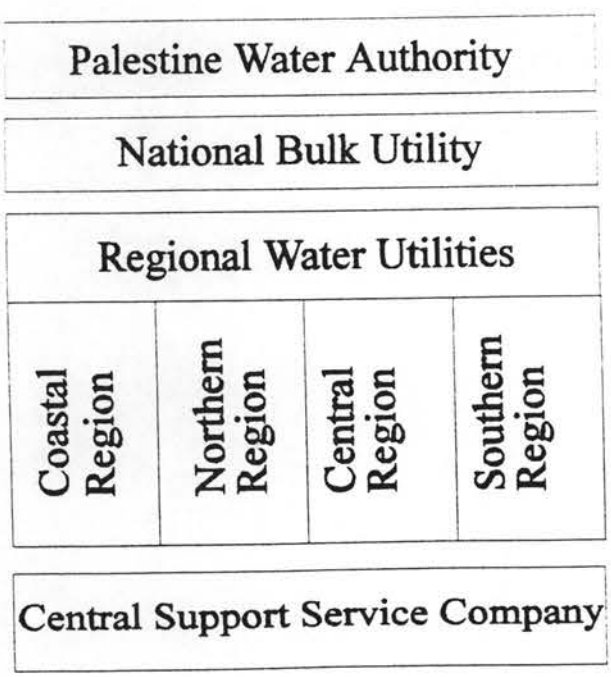

Fig. 3. Future Institutional Framework

(figure 2) based on improvements to the present setup has been developed and is also shown. The permanent future framework recommended is as follows:

* The Palestine Water Authority (PWA) would have as its objective the management and efficient allocation of **all water**, to achieve social, economic and environmental goals. This will include: conservation and minimizing waste; protection from overexploitation; protection from pollution; price regulation; consumer protection; policy setting; standard setting and enforcing; strategic planning; supervision of enterprises; ensuring universal access to services; and international relations and negotiations.

* A National Bulk Water Utility (NBWU) is an executive and autonomous body whose objective would be the provision of large-scale, "wholesale" **all water** services. It will be responsible for (contracting out as appropriate) design, construction, operation and maintenance of wholesale services including, large scale water abstraction (e.g. wellfields), diversion schemes (e.g. West Ghor Canal), major storage dams, interregional water transfers and major treated wastewater and stormwater reticulation. The NBWU would probably not be implemented until well into the transition period, when demand for a bulk utility has been demonstrated. Until then, major inter-regional works would be undertaken jointly by RWUs on an ad hoc basis. The NBWU might be initially sponsored by the PWA as a public autonomous body, or it might be established as a cooperative by the RWUs and could then include the CSSC (see below).

* Regional **All Water** Public Autonomous Utilities (RWUs) whose objectives would be to deliver "retail" **all water** services to the customer. It is recommended that four RWUs be formed, a Coastal, Northern, Central and Southern RWU. Their boundaries, which will need to be determined, may be based on political or drainage basin boundaries, or a combination of both. They would be responsible for design, construction, operation and maintenance of retail consumer services including: water supply; wastewater collection, treatment and reuse; stormwater collection, treatment and reuse; and water and treated wastewater supplies for irrigation. In addition, the management of solid waste disposal, particularly landfill operations, may need to be an additional responsibility, unless specifically provided for under other arrangements. The RWUs will be local government owned, with community representation on their Boards. They will be administratively and fiscally autonomous, although tariffs will be reviewed, and water abstraction and discharge will be licensed and monitored by the PWA. The RWUs must therefore also seek full cost recovery in their operations.

* A Central Support Service Company (Companies) (CSSC) whose objective would be to provide support to the RWUs in areas which can be more efficiently provided by a central organisation, rather than separately by each RWU. These

services will include training, central purchasing, specialised electro-mechanical services and hydrogeological services, and activities required only infrequently. The CSSC(s) will be established as demand justifies (and where services are not available from the private sector) later in the transition phase. Until such time, the services will be provided by a department within the Central Region RWU, with financial support from other regional authorities and the PWA. The CSSC(s) will have a fully commercial relationship with the RWUs and any other clients.

4. Institutional Functions

The detailed functions of the different components of the proposed institutional framework are shown in figure 4. The PWA will ensure that there is no conflict between the wholesale functions of the NBWU and the retail functions of the RWUs.

5. Workshop Process

The workshop itself took place over 21-22/4/94. This report was prepared on 23/4/94 by a drafting committee, which reported back to a short plenary on 24/4/94. The workshop process included:

* Agreeing that the starting point should be the delivery of **all water** services.

* Defining the whole spectrum of water resources management and **all water** services delivery functions, necessary for service quality and sustainability.

* Characterizing these as regulatory and service functions.

* Identifying institutional options, selecting those considered most appropriate for Palestinian conditions (table 1) and determining that joint management of water supply and wastewater disposal offers the greatest opportunity for efficient management of **all water**.

Table 1. Water and Wastewater Institutional Options

	Municipal	Regional	National
Government	X		X
Public Utility	X	X	X
Private Management		X	
Fully Private			

Palestine Water Authority

Policy/Planning
- Legislation
- Standards
- Allocation
- Finance
- Strategy
- Planning
- International
- Coordination

Regulation
- Finance (Tariff review & audit)
- Licensing
- Inspection & monitoring
- Legal action

Hydrological assessment
- Monitoring
- Databases
- Mapping
- Analysis

Public information
- Data dissemination
- Public education/awareness
- Consumer consultation

R & D
- Technology transfer
- Technology Promotion

National Bulk Utility

- Planning
- Implementation
- Abstraction
- Distribution
- Operation and maintenance
- Charging

OF large scale (wholesale) services
- Abstraction/intakes
- Diversion (eg. canals)
- Storage (eg. dams)
- Interregional transfer
- Treated wastewater/ stormwater distribution

Regional Water Utilities

Water supply
- Abstraction
- Treatment
- Storage
- Distribution
- Maintenance

Wastewater
- Collection
- Treatment
- Disposal & reuse

Stormwater
- Collection
- Treatment
- Reuse/recharge

Irrigation
- Abstraction
- Storage
- Distribution

General
- Planning
- Operation & maintenance
- Finance (billing and collection)
- Public education and awareness

Coastal Region	Northern Region	Central Region	Southern Region

Central Support Service Companies

Electro-mechanical
- Leak detection
- Meter repair
- Weld X-Ray
- Specialised labs
- Pump maintenance

Hydrogeological
- Drilling
- Pumping tests
- Well logging
- Geophysical logging
- Surface geophysics
- Well maintenance

Joint purchasing
- Chlorine
- Meters
- Pipes
- Fittings
- .. etc

Training
- Managers
- Operators
- Technicians
- Office staff

Transport

Fig.4. Institutional functions

* Analysing and ranking institutional options for delivering service functions (table 2).

* Identifying the need for a central service support company / companies.

* Considering the need for a bulk water utility.

* Defining the role and responsibilities of a national regulatory agency and identifying this as the PWA.

6. Actions

The first action required is the adoption of the institutional framework. Following the adoption of the framework, its implementation requires the following early actions:

* PWA organisational study (including human resources) and definition of follow-up PWA studies, including:
  i. drafting of legislative structure;
  ii. establishing standards;
  iii. defining abstraction and discharge licensing procedures;
  iv. preparing an outline national strategy (allocation, service levels, etc); and
  v. defining monitoring networks and protocols.

* Regional utility organisational studies (including human resources), requiring the definition of boundaries, including:

  i. (as first priority) Coastal RWU (ie Gaza) and Jericho organisational studies (with Jericho to be linked later to the Central Region RWU - ie currently JWU); and
  ii. organisational studies of other regions.

* Rapid HRD and training needs assessment as a first priority, followed by the preparation of a detailed training plan after the completion of the RWU organisational studies, which will identify needs in detail.

* At a later date, organisational studies may be required for the NBWU and the CSSC(s).

The organisational studies for the PWA and RWUs would define details of structure, identify methods of operation, provide operational manuals where appropriate, determine staff and budgetary requirements, and formulate training and certification programmes. The Water Sector Training Plan will consolidate training needs identified in the organisational studies and define a programme, including identifying appropriate training institutions.

AN INSTITUTIONAL FRAMEWORK FOR WATER within the PALESTINIAN NATIONAL AUTHORITY

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VOLUME 2: ANNEXES (TO SUMMARY REPORT)

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CONTENTS

ANNEX A. Institutional Options: a Discussion

1. Introduction

At the beginning of the workshop, the whole spectrum of functions needed for water resources management and for water and wastewater delivery was reviewed and listed. These functions were characterised as either regulatory or service delivery and the principle that the functions should be institutionally separated, the first in a national government agency and the second in a utility or utilities, was agreed. The rationale for this is that it is not possible to regulate resources effectively if you are also the resource developer - ie the potential prosecutor and defendant (poacher and gamekeeper) should not be in the same institution. Other important principles emerged during the workshop; these are listed in section 2 of the Summary Report.

Workshop participants then decided to start their deliberation of the institutional framework for water in the State of Palestine from the point of view of the end user, and not initially from the perspective of the central government. Thus the pieces of the picture would first be examined and then assembled in different ways to give alternative options for the institutional framework; instead of starting with the picture and breaking it down into its component pieces. The starting point for deliberation was therefore the provision of water and wastewater services. This annex follows the sequence of the workshop discussion and describes the rationale for the conclusions given in the summary report.

A large number of possible options for the delivery of water and wastewater services exist, ranging from a municipal department responsible for a single service, such as water or sewerage, to a parastatal or fully private company responsible for a number of services, such as water supply, sewerage, solid waste collection and electricity, as well as other services which can be commercialized.

2. Single vs Dual Purpose Utilities

The workshop participants considered the benefits and disbenefits of having water supply and sewerage services provided by a single or by two separate organisations. The following reasons, in the judgement of the workshop participants, suggest strongly that the provision of these two services by a single institution is preferable:

* Single water utilities are generally much more capable than single sewerage utilities, because water supply generally receives higher priority than sewerage. Often, managerial and operating capacity exists within a water utility where waste water disposal organisations do not yet exist.

* Technologies are similar, as are service area, making joint operation feasible and efficient.

* Billing of wastewater services is easiest when based on metered water consumption.

* Enforcement of collection of sewerage bills by means of interrupting water supply service is more effective than any other enforcement procedure.

* Regulations are similar for both services and joint reporting, monitoring and enforcement are more efficient.

* Effluent reuse and environmental protection in a water scarce area are in the self interest of an institution operating both services, while they may be neglected by an organisation responsible for only one service.

* Dual water supplies, high quality for human consumptive uses, lower quality (ie treated wastewater) for gardening, toilet flushing etc. are facilitated by a single agency responsible for both services.

* Administrative and operating efficiency is greater when a single organisation operates both services because many functions can be shared.

Workshop participants discussed the arguments against the combination of service provision by a single provider, but consider that the benefits outweigh the disbenefits. Arguments commonly presented against joint provision of water and sewerage services include:

* Politically more acceptable, and water-only services are sometimes preferred by consumers because:
  - water is traditionally considered far more important,
  - ignorance of detrimental impact of unsanitary conditions, and
  - generally high cost of conventional sewerage.

* Resistance by water utilities to assume responsibility for a service which complicates their operations, is more expensive and is considered less desirable.

* Reluctance by municipalities to give up control over a potential source of employment.

3. Range of Utility Options

Many institutional options exist. Table A1 below is a matrix of possible options relevant to Palestine. The marked (X) options were formally analyzed during the workshop to determine their suitability (ranking). The analysis is based on weighted

criteria which reduces subjective judgements and results in an objective assessment of the merits of different options, as explained in section 4 of the main report.

Table A1: Institutional Options

	Municipal	Regional	National
Government	X		X
Public Utility	X	X	X
Private Management		X	
Fully Private			

Complete privatisation, i.e. private ownership and management of assets, was deemed unsuitable for Palestine at present. This option requires a sophisticated legal and regulatory framework and civil servants experienced in the monitoring and assessment of compliance with laws and regulations to prevent abuses possible by a private monopoly. This capacity clearly does not yet exist in Palestine. It is also likely that the public would not be ready to divest itself of assets after a period during which it had relatively little control over them. These options were therefore not analyzed in detail.

Another option not analyzed was that of Regional Government, which would consist of a water and sewerage department of a regional government. The possibility of regional government units existing in the near term was considered unlikely by the workshop participants.

Private management of municipally-owned assets was considered unlikely at the beginning of discussions. There was a belief that after gaining control of their own destiny, people would have little desire to relinquish control over an essential public service, particularly due to the need for capacity building in the public sector. Because the participants realized the potential benefits of efficient private management, they decided to analyse the one option which would most likely be attractive to private utility management enterprises: the Regional Utility. The individual municipality appears to be too small to be of interest to entrepreneurs, and a national utility was deemed likely to become bureaucratized and to give too much influence to a private entrepreneur.

The utility options reviewed are discussed below.

* A Municipal Water and Sewerage Department is a common solution in many countries. In all but relatively large municipalities, the effectiveness of these departments is inadequate. Their small size and their limited income often

prevents municipal departments from investing in necessary facilities, and, coupled with fixed local government employment benefits, from attracting adequately trained staff. The result frequently is that such departments are overwhelmed by the increasingly complex requirements modern society requires for the protection of public health and the environment. In addition, the direct control of the department by the mayor does present the opportunity for political interference and there is very commonly cross-subsidy from the utility accounts into other urban services, reducing investments in operation and maintenance.

* A National Water and Sewerage Department within government would certainly have the size and the income necessary to invest in the facilities needed, although civil service terms may limit attractiveness to good technical staff. The disadvantage of large central organisations is that they tend to be unable to "stay in touch" with the user, becoming very bureaucratic and inflexible over time and reducing the customer orientation essential in a service utility.

* Municipal, Regional and National Autonomous Public Utilities offer the advantages generally ascribed to private enterprise: independence from political influence, administrative and fiscal independence, a commercial approach to the provision of services and execution of their tasks. The differences between them are benefits (or disbenefits) of scale and the relative closeness (or remoteness) from the consumer. The latter is an important consideration because experience elsewhere clearly indicates that utilities with accountability to and participation by the user community have a far greater chance of succeeding in the provision of a sustainable and efficient service.

* A Regional Autonomous Public Utility, with Publicly Owned Assets and Private Management is an institutional arrangement which maintains public ownership and control while obtaining the benefits of efficient private management. The major difference between this solution and the Public Utilities discussed above is the possibility of fostering the profit motive of a private entrepreneur with a carefully drawn management contract. Unfortunately, the more latitude the entrepreneur is given to achieve the utility's objectives and maximise his profits through efficiency gains while holding down tariffs, the more complex the contract, its monitoring and enforcement. In the simplest contract format, a management fee is negotiated, and there is no monetary incentive to optimize performance; in the most complex format, payment is by a share of profits, but the contract stipulates specific rules on asset conservation and depreciation, investment for expansion, return on assets, tariff increases, etc. These rules can be difficult to design and enforce where appropriate experience is lacking. Thus, while this option scored highly in the numerical analysis presented in table B-2, the workshop participants do not recommend its adoption, at least in the short term. It does however, remain an option over the longer term.

4. Multipurpose Utilities

After analysing the various options, workshop participants then considered the feasibility and desirability of adding related functions to the water and sewerage utility. The following recommendations resulted from the discussions:

* Surface water runoff is an important potential source of water and at the same time may present a pollution hazard to surface and ground water. Management of surface water drainage should therefore be vested in the water and sewerage utility to ensure that this water is treated, when necessary, and in any event prevented from run-off and used to recharge aquifers or used directly for irrigation or other purposes, following appropriate treatment.

* The water and sewerage service provider should also assume responsibility for the provision of irrigation water, initially concentrating on substituting treated wastewater for fresh water to augment drinking water supplies, and eventually assist in the more efficient use of water for agriculture in order to safeguard the quality and quantity of water needed for human consumption and industrial and commercial development. The whole question of irrigation water licensing was discussed, characterised by the description of a farmer with an annual abstraction license for 500,000 m^3 of fresh water at a total fee of 4 JD, in contrast to a resident of Ramallah paying 1 JD per m^3. As the legislative framework for water management is developed, there will be an increasing need for the rationalised delivery and charging of irrigation waters, and for exchanging some freshwater allocations with treated wastewater.

* Of somewhat less urgency, but still potentially useful and necessary, appears to be the provision of municipal and industrial solid waste services. The responsibility of the water and wastewater organisation may be limited to operating sanitary landfills (to safeguard the quality of water resources). Alternatively, the utility may undertake waste collection directly or, preferably, contract it to entrepreneurs, to ensure that surface water channels and sanitary and storm sewers are not becoming clogged with uncollected solid wastes (a common occurrence in Gaza).

The workshop participants are fully aware that this is a comprehensive approach not in conformity with traditions of the sector. There are, however, examples of municipal enterprises performing some of these services, and several not mentioned here, with great success. Given the water resource scarcity and needs of the Palestinian population, this innovative approach should receive serious consideration. The proposed Coastal Regional Water Utility (ie in Gaza) could test the suitability and impact of this approach, as the need for a comprehensive approach in Gaza is very clear and urgent. The potential application of innovative approaches such as the re-

use of wastewater through dual quality distribution systems and irrigation/municipal supply exchanges is considerable and needs careful consideration.

5. A Bulk Water Utility

Having identified the Regional Public Autonomous Utility as the most appropriate solution for the delivery of water, wastewater, stormwater and irrigation water services within each region, the workshop discussed the potential requirement for the large-scale (wholesale) transfers of water across regional boundaries. The following needs were perceived:

* the development of large scale abstraction works (eg major wellfields) or diversions (such as the West Ghor Canal), which could serve more than one RWU;

* the development of major storage facilities (such as dams) or artificial groundwater recharge works;

* the transfer of water between regions, particularly important in achieving equity between water-short and water-rich regions (either endemic or possibly caused by local drought);

* the large-scale transfer of treated wastewater and stormwater, for example for major irrigation schemes or for artificial recharge;

* the transnational transfer of water to and from neighbouring riparian states; and

* the sale of water in bulk (and at bulk rates) to RWUs and to agricultural concerns.

In the light of this wide range of functions, the workshop proposed that a National Bulk Water Utility (NBWU) be created to handle wholesale **all water**[1] functions, as these would fall outside the remit of the RWUs (as they are inter-regional) and of the Palestine Water Authority (PWA - see below), as they would breach the regulatory role, placing a potential "prosecutor and defendant" in one institution).

The NBWU would be a public autonomous executive agency, responsible for planning, designing, implementing, operating and maintaining its facilities, and recovering its costs through charges. Abstraction and discharge would be licensed and tariffs reviewed by the PWA, as with the RWUs.

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[1] **all water** is used throughout the text to represent water in all its forms: fresh and brackish water, wastewater and urban stormwater.

The NBWU could either be established by the PWA, under appropriate legislation, or it could conceivably be created as a cooperative of the RWUs. The former arrangement would possibly give the NBWU greater stature and powers; the latter arrangement would reduce the risk of conflict with the RWUs. Conflict would need to be arbitrated by the PWA, and might occur over licensing of groundwater abstractions within one region, for example. RWU representation on the NBWU Board should be considered. It could be concluded that the presence of a national bulk utility and several regional utilities would suggest that a single national utility with regional departments would be a more rational solution. The workshop concluded that this was not the case, as all the benefits of decentralisation and accountability would be lost.

A major role for the NBWU will be that of transnational water transfers (both sale and purchase). In the short term, this would be subject to political negotiations, led by PWA. In the longer term, this could happen in a more open water market, at market prices.

6. Central Support Services

Regional Water Utilities have been identified by means of the evaluating process as the most effective institutional option to provide water supply and sewerage services. The decentralized institutional arrangement may, however, almost certainly require some central support services, provided by the private sector, or, where no private capacity exists, through a Central Support Service Company,or Companies (CSSC). Amongst the services which could be more efficiently provided by a central service organisation or organisations, or by private contractors, rather than separately by each regional water utility, are:

Electro - Mechanical Services

* Leak detection. At present, there is a great backlog of work to be done in this field. Water losses are generally high and individual utility operations lack the expertise and equipment to undertake systematic leak detection programs. The CSSC could promote improved leak detection practices, train RWU staff, and assist RWUs in leak detection programs until they have acquired sufficient capacity of their own, and thereafter on an occasional basis whenever the need arises.

* Meter Repair. RWUs almost certainly will not have a sufficient number of large water meters to make their repair within the RWUs economically feasible. RWUs may also decide to have some other meter repair work performed by the CSSC.

* Weld X-Ray. It appears unlikely that individual RWUs would have sufficient demand to justify acquiring both the skills and equipment required.

* Specialised Laboratory Services. Routine testing for some chemicals and chlorine residuals will be undertaken by the RWUs. There are, however, an increasing number of complex compounds, such as pesticides, which occasionally need to be identified, or biological tests performed which exceed the capacity of a RWU laboratory.

* Pump Maintenance and Repair. Large pumps may exceed the repair and maintenance capacity of the RWU, or the cost of maintaining a mechanical shop and staff capable of making the occasional repairs may be prohibitive.

Hydrogeological Services

* Drilling is not an activity a RWU should engage in. If private drilling contractors are not available, a CSSC could be considered to deliver the necessary services. However, given the very high costs involved, particularly in the West Bank, international competitive bidding should be seriously considered.

* Pumping Tests, Geophysical Logging, Surface Geophysics and Well Maintenance belong in the category of tasks better performed by a specialised enterprise than a RWU; ideally private consultants and contractors should be used; if not a CSSC could be established.

Joint Purchasing

* Joint Purchasing of chemicals, including chlorine, meters, pipes, valves, fittings etc. may achieve considerable cost savings over separate purchase by each RWU.

* Production of some fittings or chemicals, including chlorine, by a central or private entrepreneur may become an attractive solution if joint purchasing establishes the fact that a large enough market exists.

* Transport. RWUs will from time to time have to transport heavy equipment, pipes and fittings. Maintaining transport capacity individually may not be economically feasible, but CSSC could consider providing this service if private rental is not available.

Training

* Training is necessary at most levels and positions in every RWU. Some of this training can be provided in house, but a core of trainers at a central institution

may be a more cost effective solution than trainers in every RWU, particularly for some of the skill positions. A national training plan will have to be developed and it is likely that this plan will propose a central sector training unit. This unit may be integrated with the CSSC and use some of the CSSC installations, such as meter repair shops and test facilities, for training purposes.

In developing the CSSC(s), it is important to evaluate carefully the potential of the private sector to perform some of the functions and services described. Initially, until demand requires the establishment of an independent organisation, the CSSC should be a department of the Central RWU. All RWUs would have access to the services of this department (and later the CSSC) on a commercial basis. Until the department reaches financial viability, some support from the PWA and the RWUs may be required.

7. National Regulation and Oversight: the Palestine Water Authority.

At the apex of the institutional framework is the national regulatory authority, identified as the Palestine Water Authority (PWA). This would have as its overall objective the management and efficient allocation of **all water**, to achieve social, economic and environmental goals. These goals would be set as government policy objectives. Sub-objectives for the PWA include:

* Water conservation and minimizing waste; given the scarcity of water resources, it is essential to adopt the economists' dictum "**waste is a misplaced resource**" i.e. all wastewater, including stormwater, must be regarded as a potential resource.

* Protection of water resources from overexploitation, achieved through: careful water resources monitoring and assessment; the issuance of licences for water abstraction, with full powers to revoke or amend licences; the monitoring of licensed abstractions, with legal action taken against offenders; and the setting of licence fees to signal to abstractors the scarcity of water.

* Protection of water resources from pollution, achieved through: the setting of water quality standards; the issuance of discharge licenses; the monitoring of water quality; the enforcement of standards and licences through legal action; and the commissioning of remediation works where appropriate.

* Price regulation, through the setting of guidelines for tariff setting and the regular review of tariffs, together with the RWUs and the NBWU.

* Consumer protection, through: the representation of consumers (including general community members) on a PWA Board; the provision of a consumer consultation service; and active public education and awareness programmes.

* Policy setting, thus establishing national policies for the water sector, including: the allocation of scarce water resources between uses and users, largely through appropriate pricing of domestic, industrial and irrigation waters; the setting of standards (and their enforcement); the development of a legal framework; and the identification of policy goals, including equity goals (such as universal access to services).

* Strategic planning; based on the assessment of water resources quantity and quality, thus developing national plans for water resources management and promoting the comprehensive and integrated management of **all water**; i.e. **all water** must be allocated, in terms of quantity and quality, to optimize efficient use and reuse for maximum social, economic and environmental benefit.

* Monitoring of utility performance, including audit, to promote efficiency and customer responsiveness; the relationship between the PWA and the utilities would be fostered by the representation of the utilities on the PWA Board.

* Inter-sectoral coordination on water, through a high level forum (or council) which can bring together the finance and economic planning, water, health, agriculture, industry and energy sectors for the review and adoption of inter-sectoral policies and plans involving water.

* International relations and negotiations on riparian water rights, the management of transboundary water resources, cross-boundary water transfers, and the possible development of regional water markets. In the future, these functions may become vested in an international river basin organisation established by the riparian states of the region.

This extensive list of sub-objectives can best be met by an organisational structure that would undertake the following list of functions:

* **Policy and Planning**: which would: draft legislation and standards; establish policies, such as for water resource allocation, tariffs, service levels etc; determine sector strategies; prepare strategic plans; undertake coordination functions; and manage international relations.

* **Regulation**: which would undertake: financial regulation, including tariff review and audit functions; licensing and monitoring of abstraction quantity; licensing of discharge and quality monitoring; and legal action against those in non-compliance.

* **Hydrological Assessment**: which would include: water resources quantity and quality mapping and monitoring, through extensive field survey and an appropriate hydrometric network; archiving of hydrometric data in readily retrieved form; and analysis and modelling of hydrological data to support water resources planning and management.

* **Public Information**: which would include: dissemination of water data (possibly in year books); public education and awareness, particularly on the importance of water conservation and protection from pollution; and consumer consultation, through a freely accessible information service.

* **Research and Development**: which could focus, at least initially, on technology transfer, technology promotion, sociocultural dimensions of water use, and economic aspects of water allocation. The issue of wastewater re-use is an excellent example of a research priority.

The PWA role is thus a focal and complex one and the workshop strongly emphasised the importance of delinking these national regulatory functions from the executive functions of building schemes and delivering services. This was perhaps the most important conclusion of the discussion of institutional options.

ANNEX B. Analysis and Ranking of Institutional Options

1. Methodology

The process of selecting institutional options, discussed below, was designed to determine the most effective institutional arrangement for the long term (figure 3). Having selected the long term solution, it was then necessary to develop a solution for a transition period leading from the present arrangement (figure 1) to the long term institutional framework. The transitional arrangement is shown on figure 2. The figures are given in the summary report.

The methodology consists of first identifying institutional options, then reducing their number to those appropriate for local conditions. The second step is to identify evaluation criteria and select those appropriate to conditions and objectives to be achieved, and to give each criteria a value for each institutional option, based on the expectation of how well the proposed option will meet the criteria. The third step is to weight, in percentage terms, the importance of the criteria for the successful operation of the institution.

Finally, the values and percentages are multiplied and the weighted values of each criteria added up for each institutional option. The total of the weighted criteria then determines the ranking of the institutional option, the highest total value identifying the best solution.

This methodology ensures that the selection process is objective, transparent, and can itself be evaluated and replicated by other evaluators.

2. Institutional Options for Water and Wastewater Utilities

Institutional options are numerous, and no single option is appropriate for every situation. When designing an institutional framework, it is therefore necessary to compare the advantages and disadvantages of various options. A method which encourages an objective judgement is preferable to subjective judgements. Such a method has been used to evaluate institutional options for service delivery. The more limited institutional options available for regulatory, bulk supply and service support functions made it possible to select options for these functions without resorting to a formal evaluation process based on weighted criteria.

The method used consisted of first identifying the options and reducing the numbers of options to those which seem a priory appropriate to the Palestinian conditions. As described in Annex A, the workshop participants decided that separate water supply and sewerage service organisations would not be as effective as a utility providing

both services. The formal evaluation therefore did not evaluate the separate water supply and sewerage utility option.

3. Selection Criteria

Having reduced the choice of options to those considered most appropriate, the workshop participants then proceeded to determine the selection criteria by which to evaluate the potential suitability of the institutional options. The first task therefore is to select from a large number of potential selection criteria those considered most appropriate. This process produced the following list of criteria:

* Service Quality, essentially a judgement on how well the consumer will be served.

* Cost Effectiveness, reflecting the evaluators' expectations of how well the institution will manage and operate.

* Attractiveness to staff; good staff being essential for successful operation, this reflects the likely ability of the institution to offer adequate salaries and benefits.

* Meeting Policy Objectives (of Government), it is important to ensure that government social and economic development objectives will be met.

* Environmental Responsiveness, reflecting the likelihood that the institution will not only abide by government regulations but will actively seek to protect the environment through its actions.

* Accountability to and Participation by the Community, reflecting the likely ability and willingness of the institution to make the community a partner in its service development.

* Commercialisation, reflecting the likelihood that the institution would take advantage of efficiencies which can be achieved through contracting private entrepreneurs to perform suitable tasks, and the opportunity the institutional arrangement offers to do so.

* Flexibility, a judgement on how flexible the institution will be in taking advantage of new economic, political and industrial developments, collaborating with others, and changing its mission in keeping with demands by its consumers and the government.

Institutions were given a rating from 4 to 1, four being the best, in the judgement of the workshop participants. Discussions leading to the selection of the value was active, and the value finally assigned reflects the consensus of the group. The values are listed in table 2 of the summary report, which is also attached to this Annex as table B-2.

4. Weighting the criteria

The different criteria are not of equal importance, of course. The next task of the workshop participants therefore was to determine the importance of the criteria by giving each a weight, expressed as a percentage of the total of all criteria. Discussion revealed that developing a consensus by means of argumentation within such a large group would be difficult and time consuming. Palestinian participants were therefore asked to individually weight the criteria. The proposed weights were then tabulated, averaged, and used in the evaluation. The average, high and low weights for each criteria were found to be as follows:

Table B-1. Weights given to selection criteria

Criteria	high	low	average
Service Quality	45	15	25.4
Cost Effectiveness	30	15	23.0
Attractiveness to staff	15	5	10.0
Meeting Policy Objectives	10	5	5.3
Environmental Responsiveness	15	5	10.4
Accountability/Community Participation	20	5	12.5
Commercialisation	10	2	6.4
Flexibility	10	3	7.0

5. Ranking the Institutional Options

The average weight was then used to determine the weighted value of each criteria and each option, to determine the ranking of the institutional options evaluated. The results are shown on table B-2.

TABLE B-2: ANALYSIS OF INSTITUTIONAL OPTIONS FOR WATER AND WASTEWATER SERVICES

Institution--->		Municipal Gov't	National Gov't	Municipal Public Utility	Regional Public Utility	National Public Utility	Regional Pub.Util. Private Mgt
Criteria	Weight %	C wC	C wC	C wC	C wC	C wC	C wC
Service Quality	25.4	2 .508	1 .254	3 .76	3 .76	2 .50	3 .76
Cost Effectiveness	23.0	1 .23	1 .23	3 .69	4 .92	4 .92	4 .92
Attractiveness to Staff	10.0	2 .20	2 .20	3 .30	4 .40	3 .30	4 .40
Meeting Policy Objectives	5.3	3 .159	2 .212	3 .159	3 .159	4 .212	4 .212
Environmentally Responsive	10.4	3 .312	3 .312	3 .312	3 .312	2 .208	3 .312
Accountability/ Com. Participation	12.5	3 .375	2 .25	2 .25	3 .375	1 .125	2 .25
Commercialisation	6.4	1 .064	1 .064	3 .21	4 .256	4 .256	4 .256
Flexibility	7.0	2 .14	2 .14	3 .21	2 .14	3 .21	1 .07
Total	100	2.34	1.658	2.87	3.22	2.73	3.18
Ranking (1 = best)		5	6	3	1	4	2

Notes:

1 C = Criteria wC = weighted Criteria

2 Consideration was given to institutions responsible only for water or sewerage and institutions responsible for water and sewerage. Workshop participants determined that institutions managing both water supply and sewerage offered the greatest potential for efficient management. The process then followed included (For a presentation of results, see table 1):

* Identifying a full range of institutional options and selecting a number possibly appropriate for Palestine.
* Reviewing criteria for rating and selection of institutional options appropriate to Palestine.
* Weighting selection criteria to reflect their relative importance, with weights based on the average of numbers contributed individually by workshop participants.
* Rating of institutional options according to the selection criteria on a scale of 1 (poor) to 4 (excellent).
* Calculating the weighted rating of all options selected for evaluation and ranking them.

ANNEX C. List of Workshop Participants

Nabil Qasees	Technical and Advisory Committees
Osama Nimer	" " "
Samih Al-Abed	PECDAR
Dana Khairi	PECDAR
Taher Nasser Eddin	West Bank Water Department
Abdel Karim As'ad*	Jerusalem Water Undertaking
Hazim Tarazi*	Gaza Municipality / Technical and Advisory Committees
Munif Traish*	El-Bireh Municipality
Tawfiq Arafeh	Hebron Municipality
Ayman Rabi*	PHG / Technical and Advisory Committees
Rami Abdulhadi	Center for Engineering and Planning
Ali Yaseen	Arab Studies Society
Nader Al-Khatib	WRAP / Technical and Advisory Committees
Khairy Al-Jamal*	WRAP
Basma Abu-Swai	"
Yousef Nasser	"
Hisham Zarour	"
Rheinhard Meierjohan	GTZ
Andrew Macoun	World Bank
Musa El-Khatib	UNDP
Lana Abu-Hijleh	"
John Kalbermatten*	Resource Person (UNDP)
David Grey*	Resource Person (UNDP)

* drafting committee on 23/4/94