



الجمهورية اليمنية

رئاسة مجلس الوزراء

الهيئة العامة للموارد المائية



REPUBLIC OF YEMEN

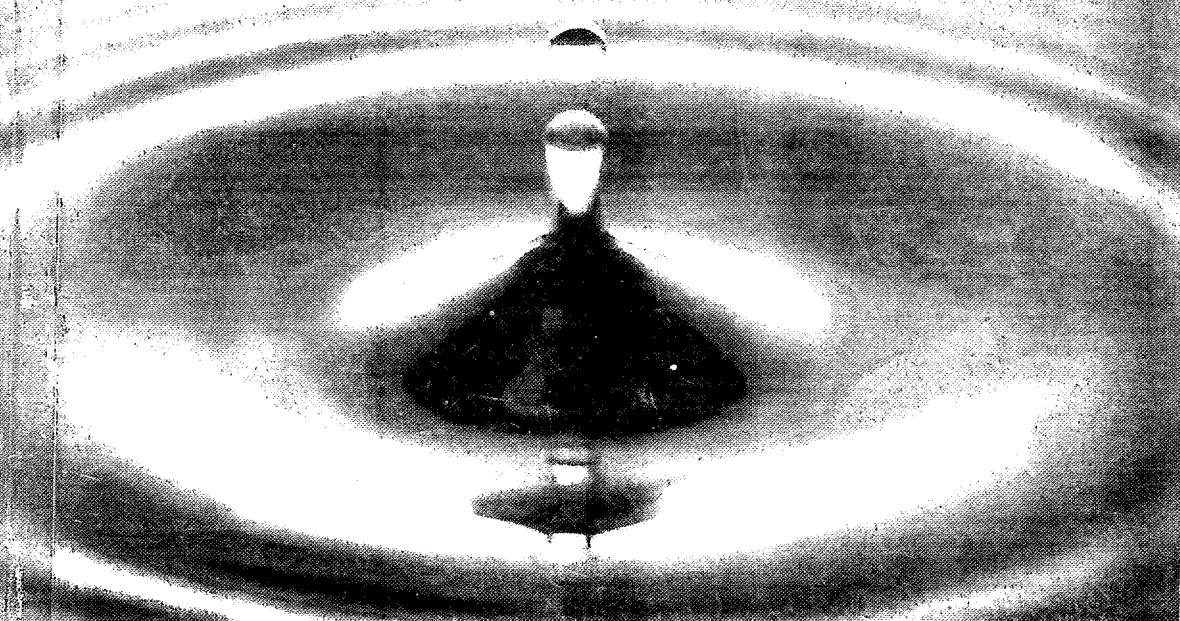
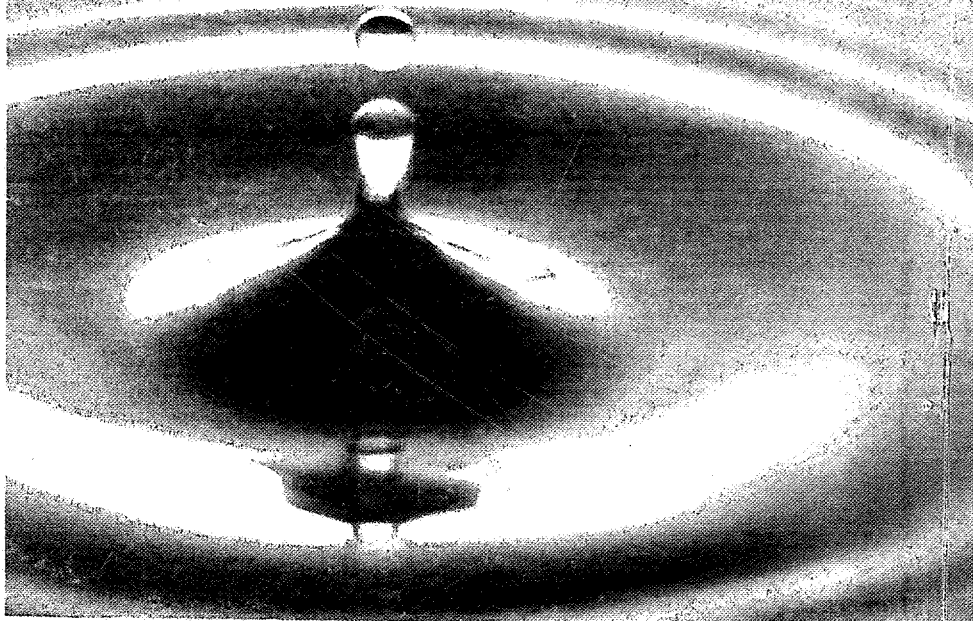
MINISTERIES COUNCIL

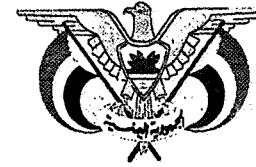
National Water Resources Authority

(NWRA)

الإستراتيجية الوطنية للمياه

NATIONAL WATER STRATEGY





REPUBLIC OF YEMEN
MINISTRIES COUNCIL
NATIONAL WATER RESOURCES
AUTHORITY (NWRA)

NATIONAL WATER STRATEGY

1. Background

The Republic of Yemen has been facing a chronic imbalance in the population-water resources equation, as a result of high rates of population growth and absolute scarcity of water resources.

The total renewable freshwater resource of the country is estimated at 2500 MCM per year, of which 1500 MCM is surface water and 1000 MCM is groundwater. The population of 1997 was around 16.5 million, growing at annual rate of 3.5%. The per capita share of renewable water resources was (151) cubic meter per annum in 1997 and declines at a rate equal to that of the population increase. This per capita share is less than 14% of the per capita water needs of 1100 cubic meters.

The total annual water use in the country is estimated at 3200 MCM. The water deficit between water use and renewable water resources was estimated at 400 MCM in 1990 and 700 MCM in 1995. It is anticipated that this deficit will soar to 920 MCM in 2005, even if irrigation efficiency were to be improved. The deficit is made up by overdrawing aquifers, resulting in lowered water tables and declining water quality. If groundwater extraction continues at the present rates, several aquifers will be depleted. As a consequence, many population centers will have no water for domestic purposes, and agriculture will disappear in a decade or two.

Agriculture accounts for 93% of water use. Irrigated area is in the order of 488 000 hectares, of which 75% is irrigated by groundwater, some estimates indicate that qat consumes about 30% of the total water use. Irrigation efficiency is low (30-40%).

Municipal use accounts for about 6% of total water use. It is estimated that 45% of urban households are connected to the public water network and the rest of households are supplied with water from the private sector. Unaccounted for water rang from 30-50%. Public sewerage coverage is only 10%. In rural areas, considerably less than half of households have access to safe water, and 19% of households have access to safe sanitation.

The water sector is managed by the public and private sectors. The public sector is represented by five main institutions: the Ministry of Electricity and Water, the Ministry of Agriculture and Irrigation, the National Water and Sanitation Authority, the General Authority for Rural Electricity and Water Supply and the National Water Resources Authority.

In general, water institutions suffer from weak structures, and lack interactive coordination, which is required to address the sector challenges in an integrated manner.

The above clearly indicates the serious dimensions of the water crisis in Yemen, which is primarily manifested by scarcity of water resources, depletion of groundwater, low efficiency of water use, and by low coverage of water and sanitation services. It is imperative to address this crisis, at the official and public levels, within a national comprehensive water strategy, which set for the long term objectives and principles of the water sector, and the Government intentions towards it.

Cognizant of the above, the government has adopted the following water strategy, and will supplement it with a set of policies and action plans to help achieve its objectives, as such as irrigation policy, water utility policy, and wastewater policy.

The National Water Strategy

Objectives

1. Protection of water resources from depletion and pollution.
2. Optimal uitizaltion of water resources to achieve the highest value for water.
3. Provision of water to meet the demands of society for all purposes.

General Principles

4. All surface and ground water resources within the boundaries of the Republic are considered natural resources owned as public property.
5. The State shall orient and regulate the exploitation of water resources so as to serve the public welfare, within the framework of legislation and regulations pertaining to water resources.
6. Each citizen has the right of access to water to meet the basic demands of his household. Polices will determine the minimum levels of these demands.
7. The water sector shall occupy the first rank among economic and social development sectors. Water security is ranked second to national security.
8. Existing water rights shall be respected.

9. The national water strategy shall be considered as a basis for other related strategies and policies.

Water Resources Development and Management

10. Develop; unify and expand the national water-monitoring network; enhance the programs of data collection, processing, updating and dissemination; and develop a comprehensive national water data bank.
11. Assess periodically available and potential water resources, and explore new water resources.
12. Divide the country into water basins and areas and consider them as the base for water resources planning and management.
13. Categorize water basins according to their water conditions, and take urgent measures in the depleted aquifers.
14. Consider water resources and their costs to be the basic criterion for project and plan evaluation.
15. Exploit renewable groundwater, in accordance with natural recharge rates, wherever possible and exploit non-renewable groundwater with caution and after conducting elaborate studies and investigations.
16. Tap the full potential of surface water to the extent permissible by technical and economic feasibility and by environmental and social impacts, with special regard to dams and weirs construction; and study the

conjunctive use of surface and groundwater with different qualities.

17. Maximize the use of rainwater through water harvesting techniques, especially in rural areas; rehabilitate agricultural terraces; and conserve trees and vegetative cover.
18. Enlist non-conventional water resources as potential resources to the extent permissible by technical, economic and environmental feasibility. This includes wastewater treated to standards that allow its reuse in restricted and unrestricted agriculture and other non-domestic purposes including groundwater recharge. It includes also marginal quality water and brackish water to support irrigated agriculture and desalinated brackish water and seawater for domestic, commercial and industrial purposes.
19. Protect water resources, particularly groundwater, against pollution caused by whatever means, including solid and liquid waste disposal, mining, land fills, agricultural inputs, sea water intrusion, and the like.
20. Employ integrated water resources approach in order to achieve the highest possible efficiency in the allocation, conveyance, distribution and use of water; and adopt a dual approach of demand management and supply management.
21. Give absolute priority in allocating water resources to domestic use, second priority to industrial, tourist and services uses, and third priority to agricultural use.

22. Facilitate the transfer of a portion of water out of agriculture into population centers to meet the pressing domestic demand, against fair compensation.
23. Regulate, in cooperation with users and local communities, the exploitation of water resources, especially ground water, prohibit the drilling of wells and abstraction of groundwater without obtaining a drilling license and an abstraction permit issued by the competent authority, and set a minimum distance between wells.
24. Reduce gradually the excessive abstraction of groundwater by removing all the distortions and incentives that have led to it. This might include in this regard: introducing a gradual increase of diesel price, leaving higher tariffs and taxes on pumping equipment, and eliminating credit subsidies for pumps.
25. Address the qat issue and its enormous water consumption by conducting a comprehensive study on qat from all aspects, by developing and implementing a campaign to reduce its adverse impacts, and by treating qat as a crop and including it in official statistics.
26. Raise irrigation efficiency within a program which includes:
 - The transfer, adoption and promotion of modern irrigation technology, such as piped conveyance and distribution, lining of canals, and drip irrigation; and the provision of necessary support and incentives to replace traditional irrigation practices with modern irrigation technology.

- Rehabilitate and manage spate irrigation schemes through a participatory irrigation management (PIM) process which combines both rehabilitation of schemes and their progressive hand over to users.
- Revive research and extension services in the field of irrigation.
- Eliminate import duties on water-saving equipment, and encourage their local manufacturing.

27. Encourage partnership with users and local communities in the management of water resources, and in the financing, operation, and maintenance of irrigation and rural water supply projects.

28. Encourage rainfed agriculture.

29. Encourage the planting of crops with low requirements and with marginal water quality.

30. Diversify economic activities in rural areas.

31. Improve and rehabilitate urban water networks to reduce water leakage to acceptable levels.

32. Link urban growth and industrial projects with water availability.

Legislation and Institutional Set-up

33. Update legislation whenever necessary to respond to emerging needs, and enforce laws, by-laws and regulations with due diligence.

34. Issue a water resource law.
35. Issue an irrigation law.
36. Review the by-laws and regulations of water institutions, and remove duplication of institution jurisdictions.
37. Legislate for the participation of private sector in the activities of the water sector wherever necessary.
38. Review, periodically, institutional arrangement to appraise adequacy of the status quo through the changing conditions, and restructure institutions accordingly.
39. Restructure water institutions to meet the objectives of financial and administrative decentralization and autonomy, and the delegation of authority to achieve these objectives.
40. Consider the creation of a ministry of water resources and environmental to integrate the National Water Resources Authority and the Environment Protection Council.
41. Create an adequate mechanism to allow interactive coordination among water institutions.

Public Awareness

42. Conduct programs and national campaign, through all available fora and means, to educate the public on the grave water situation, water conservation and pollution

protection methods, and the cost of providing water and sanitation services. This includes: Mosques, Schools, Education Curricula, Official and private mass media, Films, Bulletins and Posters.

43. Conduct periodic national debates on water, in order to create national consensus for a partnership between all strata of society to address the water crisis.

Capacity Building and Performance

44. Build the capacity of water institutions.
45. Give proper attention to human resources development, and trim over-employment to reach optimum employment levels compatible with efficient management.
46. Exempt water and wastewater utilities from civil service regulations.
47. Appraise, continually, human resources performance to upgrade capabilities, and sustain excellence, and introduce incentives for personnel excellence.
48. Monitor and rate performance efficiency and management of water and sanitation systems.

Health and Environment Standards

49. Set, review, updates and enforces national water and sanitation standards.

50. Establish a comprehensive program for water quality to monitor water sources, drinking water, and wastewater treatment plants influents and effluents.
51. Establish and properly equip water laboratories to control water quality.
52. Conduct environment assessment for all major projects.

Private Sector Participation

53. Expand as much possible the role of the private sector in most activities of the water sector, and adopt as appropriate service contracts, management contracts, management contracts, concessions, and other form of forms of private sector participation.
54. Consider the concepts of BOO/BOT.
55. Reduce the role of the private sector in the development of groundwater resources where reduction of abstraction is sought, and encourage the development of water users associations to cooperate on the sustainable management of both groundwater and surface water resources.
56. Encourage and expand the role of water users associations and beneficiaries in the management and financing of current spate irrigation schemes.
57. Adopt the principles of demand-drive and community participation and ownership for all rural water supply projects from the beginning of the project cycle.

58. Regulate water markets, and monitor vigorously the quality of water supplied.
59. Initiate the creation of regulatory regimes at the concerned water institutions, and supplement them with the necessary laws and regulations, in order to regulate the activities of the private sector.

Investment and Water Pricing

60. Prepare a long-term, prioritized unified and realistic investment program for the water sector.
61. Coordinate donor's activities within the investment program of the sector.
62. Reorient public expenditures so that absolute priority is given to the water sector in the government budget and in the socio-economic development plans.
63. Prepare a long-term plan for the provision of water and sanitation services to population centers.
64. Price water in a realistic manner for all water uses, and progressively adjusts water tariffs to cover at least the cost of operation and maintenance. The ultimate objective shall be full recovery of the cost of utilities and the provision of services.
65. Subject to the over-riding objective of sustainability of service, link cost recovery to the per capita share of the GDP, cost of living and the family basket of consumption. However, profitable undertakings in

industry, tourism, commerce and agriculture shall pay the fair water cost.

66. Establish a fund to support the water sector and seek its financial resources.

Research and Development

67. Encourage and enhance applied research on various water topics, such as water economics, crop water requirements, evaporation reduction, irrigation technologies, farming practices, low-cost wastewater treatment and the like.

68. Facilitate the transfer and adaptation of appropriate water technology.

69. Encourage liaison with universities, research centers, and with regional and international institutions to keep abreast with modern technological advances.

ب. إضافة عبارات الهيئات والجهات العاملة في قطاع المياه إلى كلمة المؤسسات عند ما تكون المواد ذات علاقة بقطاع المياه بشكل عام.

ج. إضافة مادة تتعلق بمراعاة الحقوق التقليدية والقائمة في المياه.

د. تعاد صياغة المواد لتعطي الفهم بأن الري جزء من قطاع المياه.

هـ. الإشارة إلى ضرورة إيجاد آلية للتنسيق بين الجهات العاملة في قطاع المياه وبين هذه الجهات والمستفيدين.

و. توضيح المادة (٢٩) في ما يخص فعاليات القطاع.

٤-توعية الجمهور:

أ. أن تكون المواد واضحة لإدراج التوعية المائية في مناهج التعليم.

٥-بناء القدرة المؤسسية:

أ. تكون بناء القدرة المؤسسية لكل الجهات العاملة في قطاع المياه.

ب. تعديل المادة (٣٨) لتعطي معنى المرونة والاستثناء من نظام الخدمة المدنية.

ج. توضيح معنى (تصنيف فعالية...) في المادة (٤٠).

٦-المعايير الصحية والبيئية:

أ. الإشارة إلى مخلفات المصانع في المادة (٤٢).

ب. الإشارة إلى الأثر البيئي عند دراسة المشاريع الكبيرة.

٧-الاستثمار وتسعيرة المياه:

أ. الإشارة إلى أهمية مشاريع مياه الشرب في الريف.

٨-البحث والتطوير:

أ. إبراز دور الجامعة ومراكز البحوث.

ب. توضيح المادة (٦٠) حول تطوير التكنولوجيا.