

7.2.2 Socio-Economic Benefits and Justification

The need for improving urban sanitary conditions in Aden is evident. Inadequate sanitation and inadequate sewerage treatment facilities appear to be the leading cause of detrimental environment and infectious diseases in the urban areas. There is no doubt that sanitary conditions in the Municipality need to be alleviated substantially.

Therefore, though the economic benefits are unquantifiable, the project will be justified on the basis of following socio-economic benefits to the county.

(1) Urban Environmental Impacts

The existing sanitary situation will further deteriorate due to low precipitation and due to the obsolete distribution network in Aden. In particular, the older districts in Ma'alla and Tawahi, where low-income people live, only "sweeper passage" system is installed and is not, as yet, provided with modern sewerage systems.

Water borne diseases caused by stagnation of effluent appears to be extremely serious. Providing appropriate sewerage facilities in Aden would substantially improve flow of effluent and put away undesirable odor from stagnant water and reduce the risk of disease.

Uncontrolled discharge of untreated effluent into the Tawahi Bay has been a source of complaints, due to the possibility of contamination of the Bay. An environmental study carried out this time including mathematical simulation on sea current movement in the Bay reveals that there seems to be limited water pollution at present due to outfall of effluent. However if no appropriate remedial measure is taken water pollution would be further aggravated with adverse effects on the natural environment (e.g. fish, birds, plant etc.) in the Bay and on the human population residing nearby.

The new treatment facilities to be constructed under the proposed project will treat all the effluent from domestic and industrial factories before discharge. The project will greatly contribute to enhancement of the status of Aden international harbor and improvement in the urban sanitation environment.

(2) Least-Cost Considerations

The project presents a least cost solution to the long-term sewerage development plan for the Aden Municipality, which is derived from a comparative analysis on possible alternatives based on acceptable demand projections and design parameters, method of treatment, route of force main, location of pump stations, adequate rehabilitation of existing facilities and appropriate level of technologies. The recommended alternative selected out of four alternatives, particularly introduction of treatment facilities, will benefit the people in Aden in a cost-effective manner as well as urgent pollution control in the Inner Harbor and comprehensive environmental protection in the long-run.

(3) Beneficiaries

The proposed project will benefit the present and future population of Aden. It will provide treatment to sewage from an estimated 152,000 inhabitants living in the project area and from public building, commercial shops and industrial factories connected to the sewer network will have major health, environmental and economic impacts. Residents along sweeper passages, in particular, are affected by the obnoxious conditions prevailing at present, as a result of a deteriorated network. Improvements as a result of network rehabilitation and sewage treatment, will provide a better environment for the estimated 661,000 urban population as a whole in Greater Aden in 2010.

(4) Institutional Sustainability

The GDLG, the project execution agency, as well as Aden Municipality have so far demonstrated sufficient capability to carry out development projects and have committed to implementation of institutional strengthening efforts. This was evident from the successful construction and operation of the Sheik Othman treatment plant and its related sewerage project in 1982 and onwards.

Under the proposed project, it is expected that the Government would take the first step towards establishment of financial viability by introduction

of sewerage tariff which would reflect the real cost of providing sewerage services in Aden. With the collected revenues, it is also expected that the municipality will be able to handle, more effectively, rehabilitation and maintenance activities.

The project construction will provide the GDLG and the Municipality technical staff with an excellent opportunity to gain experience and obtain technology transfer, especially in areas such as detailed design of pipeline network, sewage treatment plant and construction supervision. The financial capability and technical improvement from institutional strengthening would be other benefits that will be derived from the project.

(5) Economic Impacts

The country is presently undergoing an economic slump, and construction work and network rehabilitation will provide numerous business opportunities. It will not only have direct effect on the construction and engineering industry but also indirect impacts on commercial and manufacturing industry development. The contribution to the macro-economic development of country would be substantial.

(6) Reuse of Treated Effluent

The Greater Aden is presently supplied with water from boreholes in the Wadi Tuban Aquifer which is also extensively used for irrigation in the Tuban Delta. The rate of water extraction has largely exceeded the aquifer recharge and, as a result, the water level in the boreholes has steadily declined, necessitating the deepening of the wells and replacement of the pumps. At the same time, as the hydraulic gradient of aquifer has lowered, sea water has intruded into the aquifer and some boreholes near the coast had to be abandoned because of high water salinity level.

Increasing the country's water resources has been the main objective and this will continue to be a high development priority in the country. The treated sewage effluent is a supplementary water resource for "the green belt project" (first phase: 180ha, second phase: 300ha, third phase: 300ha) in the city and agricultural development in the suburban area. Though

acceptance of effluent reuse takes time, the needs for additional water resources for gardening and agriculture is pressing. The proposed treatment plant, therefore, will make an important contribution to mitigation of water scarcity in the country.

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