

## C3.3 Improved efficiency of water supply

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### Characteristics

Efficiency in the supply and delivery of water includes efficient use of the resource, as well as efficiencies in canal and pipe distribution networks. Efficiency of supply can take place on many levels. *Rain water harvesting* is an approach whereby rain is collected and stored in the soil profile, or in tanks, ponds, or cisterns, providing water for irrigation or domestic purposes, rather than immediate evaporation. Rainwater harvesting is particularly useful where rainfall is highly seasonal and can reduce the volume lost to the community in run-off. It has applications in both rural and urban areas where rainfall can be collected from roofs and hard surfaces.

At the level of *water utility*, efficient supply management may involve improvements in: abstraction, treatment, bulk transfers, local distribution, consumer meters, revenue collection, appropriate economic analysis and accounting procedures. Important tools for improving water supply efficiency for utilities include:

- Universal metering
- Distributional zonal metering
- Leakage and pressure reduction.

Dual supply systems of different water quality for different uses can be a cost effective option (and may be useful for Recycling and reuse. In irrigated agriculture where there are often heavy water losses before the water reaches users (up to 50%) there is much scope for improvement. Improvements in conveyance and distribution and field application can be used to change traditional open canal systems to pipe conveyance and sprinkler/drip irrigation.

A balance needs to be struck between the capital investment needed to expand supply capacity and investment in operations and maintenance, and the cost of rehabilitation to make the most efficient use of existing resources and facilities. Water savings will often postpone major capital investments in supply infrastructure.

Introduction of efficient supply approaches in utilities or irrigation systems may need retraining and institutional reform. Changes may also need investment in the distribution systems (subject to economic and financial appraisal). See other sections: financing and incentive structures, role of service providers in IWRM institutional capacity building, consensus building, and regulations for water quality, and information and communications, and information for awareness rising.

## Lessons learned

- Improved supply efficiency can postpone the need for new capital investment, but careful economic and financial analysis will be needed.
- Some supply side techniques are capital intensive with high investment costs, such as the lining of irrigation canals.
- Rainwater harvesting is an effective intermediate technology with small capital requirements and potential for community development and management.
- Technology changes in, say, the delivery of irrigation water; need to be accompanied by appropriate changes in irrigation management.
- All changes need to be supported by training and awareness raising campaigns.
- Even though rainwater harvesting may only provide water for a proportion of the year, it may be welcomed by poor women as an alternative to carrying water from a more dependable source.