In West Africa, severe water scarcity is a common problem. This deprives people of drinking water and water for livestock.

To avoid water conflicts, water managers invite stakeholders for a dialogue and facilitate a discussion of activities to secure water for all economic activities with sustainable development / management.

Using affordable technology to bring a change

Arid/semi-arid areas depend largely on deep aquifer and limited rainfall. Introducing affordable technology, which local community could sustainably develop/manage is desirable.

- To install stone dikes in farmland to percolate rainfall down through the soil for conserving from soil erosion, for reforesting and cultivate water
- To install small deep wells generated by solar panels and drip irrigation system
Preparing for Climate Change in arid region

In PERU, installing water saving system such as drip irrigation, demonstration of good practices and training to farmers not only enhances crop yield / cost performance, but is also reducing their vulnerability against Climate Change.

Consensus among all stakeholders in watershed

There are several stakeholders not only farmers but also domestic, Industry sectors etc.

All related stakeholders are supposed to be involved in coordination meetings so as to recognize water cycle mechanism in one watershed to optimize water use.

Adaption to climate change in highland

The high mountainous is strongly affected by climate change (drought, deteriorated soil, icy temperature ).

New technology is introduced to adapt to climate change such as irrigation system, mechanized agriculture, greenhouse and reforesting.
Dialogue and Designing with counterparts

CANADA, as its part of contribution to Development Assistance, analyses water problems with engineers of developing countries.

In this dialogue, water problems to be tackled should be unveiled. A most effective and practical action plan is decided with consensus.

Engineers of Canada and Afghanistan

Dam rehabilitation for water conservation

To evade harsh social condition in Afghanistan, reestablishment of irrigation facilities is one big issue.

Dahla Dam was rehabilitated by uniting efforts of irrigation engineers.

After the completion, farmers can utilize proper water for production and can harvest much more than before.
**Planning**

EGYPT, situated in arid area, has used water resources as efficiently as possible by:

- Augmenting water use by farm land expansion, and
- Enhancing efficiency of water use.

To realize this concept, a transference of water management from government to Water Users Organization (WUO) is being moved forward.

**Implementing rehabilitation works**

**Capacity building on water management**

To enhance the efficient use of water distribution/use, accurate data collection and information sharing among stakeholders are necessary.

**After rehabilitation**

**Training of stakeholders**

**Instruction of data collection**

**New farming method for water saving is introduced**
Farmers takes part in renovation

**Rehabilitation works with participation of Water Users Organizations**

*Planning with WUO members*

*WUO members support construction*

In TURKEY, irrigation facilities and their O&M were transferred to WUOs starting from 1999.

Since then WUOs have taken the initiative to develop/maintain the facilities.

**Effective water use in farming**

Farmers’ direct participation in the O&M (Participatory Irrigation Management (PIM)) leads to a change in attitude.

Productivity per drop drastically increased under well managed WUO brocks.

*On-site capacity building*

*Soil survey by farmers*

**Sharing experiences and Capacity building**

The experiences on Construction and O&M of facilities are shared by utilizing opportunities such as WUO Congress.

Association of WUOs provides capacity building programs to technical staff in WUOs for the further development.

*WUO leaders at WUO congress*
Public Private Producer(Farmers) Participation (4P)

In SPAIN, farmers participation from Research & Development to Operation & Management in the whole infrastructure has developed with private companies’ initiative.

Many training courses are organized on technical, water management, economic and environmental issues regarding irrigation.

Modernization of development

Private companies provide several services on agriculture and water provision along with the Partnership.

Once infrastructure is built, it is monitored with GIS utilized agriculture management system.

This is quite effective for redesigning and rehabilitation.
Proper farming practices increase yield

In TANZANIA paddy farming was mainly started after the independence in 1961. By utilizing development funds, irrigation facilities were constructed. Irrigated farming is being disseminated widely which can alleviate poverty.

Ploughing with expert’s instruction

Under rainfed farming paddy cultivation is dependent on the precipitation.

3 ton/ha Rainfed

6 ton/ha Irrigated

In contrast, introduction of irrigation farming could increase production drastically and stabilize the production of agriculture.

Transplanting

Weeding

Irrigated farming boosts rural economy

With the increase of yield, net profit of farmer is augmented. This allows farmers to invest in materials and equipment for farming. Moreover, they will be able to spend on their social welfare, such as residence, education etc.

Before After

Post harvest
Experts efforts for sustainable development

A group of experts in various fields are continuously researching for improvement of water quality in lakes and for environmental conservation – focusing on the development for eco-friendly reclamation.

Sea dike projects for new farmland

In order to secure fresh water & new land and protect from Typhoon & flood, long sea dikes in the Western Sea of Korea are constructed.

A better future for farmers

Neighboring farmers can borrow the reclaimed area as farmland for the cultivation of paddy on a long-term bases.
More Irrigated Area is needed to address future crisis on food security even modernizing for water use efficiency
Feeding ever-growing population is the challenge for the mankind. Along with the world population growing, 10% of the world irrigated area per people will be decreased from 2011 (43ha/1000 people) to 2020 (39ha/1000 people) if we could not continue expanding 330 million ha of irrigated area to be needed for food security. However, the freshwater resource is limited and other water use demand is also increasing. We thus shall make a strong effort to modernize and improve water use efficiency/productivity on rural agricultural sector all over the world.

Source: Estimated by ICID based on ICID/FAO Statistics

This gap between 2011 and 2020 means to be backward to the same level in the 1950s

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