

Background

Spate irrigation system is a form of water management that diverts seasonal spate or flood water for irrigation through building temporary earthen, brushwood and stone made dikes in the river bed of hill torrents. In Pakistan, spate water is not only utilized for irrigation but also for livestock watering, filling domestic water ponds, forage production and ground water recharge. Spate irrigation depends on short



duration floods in the summer (after monsoon rains June through August) and winter (in December through March). Spate irrigation takes place in the lowlands of Pakistan where the water flows in dry nullahas or river streams.

Spate irrigation is locally called Rodh Kohi in Punjab and Khyberpakhtoonkhawa, khushkaba or sailaba in Balochistan and Nai in Sindh.

During good years, an area of 0.343 million hectares is spate irrigated. However there is potential to expand the area to 6.935 million hectares (NESPAK 1998). There are 22 million people living in the areas where spate irrigation takes place. However there are hundreds of potential sites that can be developed in spate irrigation areas that can lead to livelihood enhancement, economic growth and poverty alleviation. Spate irrigation is the largest source of irrigation after the conventional irrigation that take

place in the Indus basin. However spate irrigation is totally neglected from the mainstream development. Pakistan's poorest people live in spate irrigation areas and have less opportunities for education, clean drinking water, health care and income. The table below highlights the importance of spate irrigation development. (NESPAK 1998 master feasibility study).

Area/Province	Number of Potential Sites
Federal Area	-
Northern Areas and AJK	120
Khyber Pahtoonkhawa (KPK)	417
Punjab	211
Sindh	33
Balochistan	423
Total Feasible Sites	1204

Pakistan has a lot of potential to develop its spate irrigation areas. Special attention is needed for investment. This has to come from the provincial and federal government. This attention is needed, because horizontal economic growth from conventional irrigated areas in the Indus basin has reached its saturation point. The areas in the Indus basin do not offer the augmented scope for building new barrages and canals.

Spate irrigation however offers wider potential to expand its area. Currently spate irrigation is taking place in Banu, Luki, Tank and Dera Ismail Khan in Khyber Pashtoon Khawa, Dera Ghazi Khan, Rajanpur, and partially at Mianwali in Punjab, Dadu, Jamshoro, Thatta and Larkana and part of Karachi in Sindh. Kachi, Bolan, Sibi, Jhal Magsi, Kech, Awaran, Kharan, Chaghi, Barkhan, Musa Khel, Loralai, Zhob, Dera Bugti, Khuzdar and Lasbella and partially in Kohlu district of Balochistan Province.

The Pakistan spate irrigation network was established in 2009. Its secretariat is hosted by the SPO National Centre, Islamabad. Its network is part of an international network that has its main secretariat in the Netherlands. MetaMeta is the lead coordinator of the international spate irrigation network that has members in Pakistan, Yemen, Sudan, Eretria and Ethiopia. The network is funded by IFAD, World Bank, EKN, UNW-DPC, INESCO-IHE and FAO. It has the following objectives and activities:

Objectives

- Familiarize policy makers, implementing agencies (NGOs, government departments, safety net programs), research agencies and funding agencies with development scope, experiences and practical approaches to spate irrigation development
- Document good practices and initiate practical research in spate irrigation
- Disseminate experiences between countries

Activities

- Undertake pilot activities;
- Develop programs with implementing organizations;
- Preparation and dissemination of guidelines and practical notes, posters and pamphlets.
- Mainstream spate irrigation in higher education

- Organizing trainings
- Documentation and support student research
- Support implementation programs
- Open access information as open access and maintain website

Ongoing Pakistan spate irrigation initiative commenced 2012-2014 and has made significant progress towards the achievement of its project planned targets. Following is the achievement until December 2013.

1 Strengthening Partnership and Local Area Networks



The Pakistan Spate Irrigation network is working in partnership with SPO (Strengthening Participatory Organization) National Centre Islamabad. Regional networks are established in DI Khan, Taunsa Sharif and Dera Ghazi Khan in Khyber Pakhtoonkhwa and Punjab. More networks will be established in Sindh and Balochistan Province. An introductory network meeting has taken place with the service providing agencies, NGOs and line departments. The regional networks will act as resource management for spate irrigation

systems and will act as consultative bodies in planning of development initiatives together with the line department and service providers.

Spate irrigation presentations were given at the Arid Agriculture University Balochistan, University of Engineering and Technology Texla, University of Punjab Lahore, Agriculture College Quetta, Balochistan University of Information Technology and management Sciences, University of Agriculture Faisalabad DG Khan Campus and to political Workers at Taunsa Sharif district DG Khan. Approximately 500 people (students, farmers, academia, NGOs, Revenue Department officials and officials from the Irrigation Department Punjab and Balochistan) were made aware of the importance of spate irrigation.

Linkage Development

Pakistan spate irrigation network is based in the SPO National Centre of Islamabad. A volunteer in spate irrigation has been trained. Local networks were established in DI Khan Taunsa Sharif and DG Khan. Network members include local farmers, engineers, politician and civil society organization. They represent the interest of local spate irrigation in future planning and implementation. This can lead to better communication with lines department on services delivery and joint future efforts.

In 2013, District irrigation departments at DG Khan, Rajanpur and Dera Ismail Khan and in entire Balochistan province were asked to include spate irrigation in their annual (PSDP) Public Sector Development Plan.

Scanning of water Rights

14 Water rights documents were scanned and uploaded on the spate irrigation website. The documents are about water rights, the duties of the modus operandi of the system and who is responsible to maintain the system. The local revenue department is the overall legal custodian of water rights in the districts. During colonial British rule, separate departments (rodh Kohi) were established in the districts where spate irrigation took place. Since spate irrigation is neglected in the mainstream development of the Pakistan, the department of Rodh Kohi is in dismay.

The documents were in poor condition. Because the documents are important for future developments, they were digitized and put on the spate irrigation website. This water rights documents are now available on the website (www.spate-irrigation.org) in the special projects section:

- (1) Rodh Vehoa, (Rodh/River Suri Lundan), Rodh/River Wadoor, Rodh Kaura, Rodh Sewri, Litra and Mithwan, Hamal Wali and Birand in DG Khan district and (2) Draban Zam, Chaudwan Zam in DI Khan Khyber Pakhtoonkhawa and (3) Chachar Ganda, Qaiser Ganda, Raza and Chandia, Sultan Kot Ganda, Talli Ganda in Sibi Balochistan

Publication of Book

The famous book on the dry side of the Indus “Exploring Spate Irrigation in Pakistan” was drafted, finalized and send to Vanguard for final publication. The book gives an insight on the scope, prospects and practices of spate irrigation in Pakistan. The book will be available in bookshops in Pakistan by March 2014. Similarly, guidelines on spate irrigation in Pakistan was published and uploaded on the website.

Translation of Practical Notes and publicity Material

Pakistan spate irrigation network in association with the international spate irrigation secretariat prepared 9 practical notes that were translated in Urdu, published and uploaded on the website. Besides the practical notes, other publicity material like pamphlets, brochure, charts and flyers on spate irrigation were prepared and disseminated among students, line departments, NGOs and farmers. Several workshops and seminars were held to highlight the importance of spate irrigation.

- The potential for the Development of Spate Irrigation Development in Pakistan
- Improved Engineering in Spate Irrigation
- Improving Soil Diversion Bunds
- Command Area Improvement and Soil Moisture Conservation in Spate Irrigation
- Oil Seeds Crops for Spate Irrigation Farming in Pakistan
- Pulses (Food Legumes) For Spate Irrigated Farming in Pakistan
- Minor Crops in Spate Irrigation in Pakistan
- Drinking Water Ponds in Spate Irrigation Areas
- Improving Local Grain Storage

2. CATALYZING NEW INITIATIVES

A number of initiatives were planned to facilitate the interest in spate irrigation. Best practices examples were used to create this interest. An example is the Command Area Development Plan of Sanghar, Vehoa project in DG Khan. This initiative was done with the consultation of local farmers. The plan was sent to the Provincial Irrigation Department for future project expansion and to harness maximum project benefit. The plan was also informally sent to IFAD and the Asian Development Bank for potential funding. The plan may also be sent to other funding agencies. An introductory workshop was held with various NGOs in Balochistan and KPK province. Trainings on proposal writing in association with the local network are planned at Balochistan and Sindh Province. This to encourage the local NGOs to include spate irrigation in their focus area. Furthermore lobbying will take place at governmental, academic and planner's level to create more investment and research initiatives.

Bulldozer Replacement

The department of Agriculture and the government of Khyber Pakhtoonkhawa province were advised in the formulation of PC-I. This was later submitted to the federal government for approval. The Punjab government was advised to launch a similar project with a different approach. The government of Punjab instructed the agricultural department to replace the non-functional bulldozers. The sale proceeds shall be used for renew the bulldozers. The proposal is finalized and is in process of approval by the government.

3. INTRODUCING INNOVATIONS

Demonstration of Innovative Bank reinforcement.

This innovation is done under Inter-cooperation (Swiss Development Corporation) funding. Several other innovations were initiated in engineering such as permeable spillways, combination of road and soil bund to control rodent action. Those improvements is proposed to be documented as part of preparation of a Design Manual on spate irrigation. There has been pre and post flood evaluations by joint teams of IC, Irrigation Department, Local spate networks, PARC (Pakistan Agricultural Research Council) VEER and SPO local NOGs technical staff. This to evaluate the structures and come up with solutions. Gandhi Ashiq Khan in DI Khan is selected for improvement. The construction will jointly be financed by IC and Pakistan spate irrigation network as well.

Model for Improved Drinking Water Pond

Spate practical note No.9 is focusing on the maintenance and filling of water ponds. Safe drinking water will always be a problem in spate irrigation areas. Experiences from different part of Pakistan have been collected. A standard guideline paper that includes cost effective pond design, budgeting and household level treatment methods have been written. It will be send to NGOs and farmers networks.



4. ENGAGING WITH POLICIES

The main purpose of this activity is to ensure that spate irrigation is given its rightful place in policies and budgets at provincial level. The friends of Democratic Pakistan (FODP) has earmarked 300 million dollars for spate irrigation projects in Pakistan. The report has been send to the planning Commission (Pakistan government) for a final shape up.

The Pakistan spate network has also worked on” Alternative Concepts for Dam Development in Small Rivers” report. This report was completed in November 2013 and mainly discusses the development of off-stream storage dams and large reservoirs in spate irrigation areas for groundwater recharge. It will be shared and validated with selected partners such as Engineering Firms and the Irrigation Department in Balochistan. There is a plan to arrange workshops in each province to support alternative water storage options in spate irrigation areas. This will be combined with a provincial policy road show on the different aspects of spate irrigation development.

5. MAINSTREAMING SPATE IRRIGATION IN HIGHER EDUCATION

Spate irrigation Network Pakistan is in dialogue with various universities of Pakistan for the inclusion of spate irrigation in higher education learning. Three Universities (i) Arid Agriculture University Rawalpindi (2) Gomel University DI Khan and (3) Agriculture College DG Khan are selected for this purpose. Curricula were prepared for the Arid Agriculture University Rawalpindi. Curriculum at BSc level is in progress for the Gomel University and Agricultural college DG Khan.

The Spate Irrigation Network prepared a package of 15 taped video lectures, power points and a course module. These we shared with the universities. Furthermore 3 lecturers have participated in the short spate irrigation course held at Delft (the Netherlands) in September 2013.

The Spate Irrigation Network has prepared a couple of short videos on (i) introduction to spate irrigation (ii) improved soil bunds (iii) electric milk churners (iv) fodder choppers (v) extraction of mustered oil. These videos are available on www.thewaterchannel.tv. These and other aspects of spate irrigation area will be documented in the future. The videos and documented practices have drawn the attention in other countries. Pakistan spate irrigation network has sent 30 milk churners to spate irrigation network Sudan.