

SESSION 4 CASE STUDY 2

Capacity building for transformative change in the water sector

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ABSTRACT



This talk covers the success factors in the delivery and achievement of impact in the International Water Management Institute's large water project funded by USAID in Pakistan. More specifically, it tries to differentiate between institutional capacity building and individual capacity building. The presentation focuses on capacity building initiatives at different levels with a multitude of stakeholders to bring transformative change in the water sector. It also covers the challenge of improved water governance which is often confused with water management.

This talk is about capacity building for transformative change in the water sector. I present a case study of a large governance-related project, which is being carried out in Pakistan and Afghanistan. The talk will provide a flavour of how you can show tangible outputs in the governance domain, which is very hard. Often there is criticism that you cannot see tangible outcomes, but based on our experiences in the last six years (approximately) working on this, we have something to show.

We started by building a governance model, looking at how we were going to approach this issue. Then we followed a system change approach. Then we identified the key role of stakeholders and the kind of capacity building that was needed. And then we began our interventions.

When we look at the whole package of how we have dealt with this issue, you can see we have brought about a real transformative change.

Understanding water governance

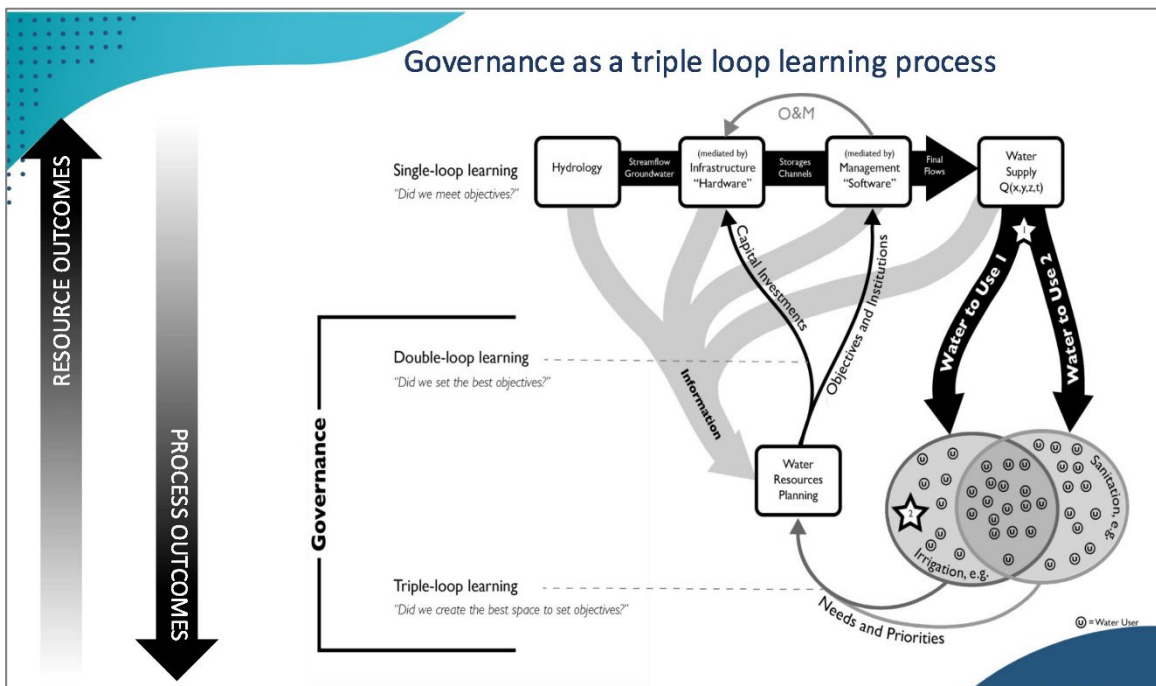


Figure 1. (Quoting Bell *et al.* 2022): 'Conceptual model for the construction of some water supply $Q(x,y,z,t)$. Spaces for improved governance are marked with dashed lines... Key governance challenges (stars) for a realised water supply are (a) allocation across different uses, and (b) allocation across users within a particular use.'

When we started this work, the challenge was that people were using management and governance synonymously. We tried to clarify Pakistan’s water governance issues and how these might be improved. (Bell *et al.* 2022). In Figure 1, the first loop is about the management of water resources. You have a hydrological system; you have some infrastructure mediated by some management tools; and you supply water to the users; and water governance controls how you set the objectives to run the system.

The real issue, where stakeholders or influential players get involved, is at the third loop, where we ask: Did we create the best space to set objectives? Did we invite the right stakeholders to set the objectives of the water infrastructure system? The idea was that management is about the resource outcomes, and governance is about the process outcomes. You need a process where you have a clear idea of what you want to achieve.

The other issue is scale (Figure 2). This irrigation system in Pakistan, in this [Indus River] basin, is very large and complex. Often what we are trying to achieve at a certain level is not very clear. Are we trying to work at the administrative level, or at the hydrological level, or in a command area, or perhaps at the district level, or at problemshed level (Mollinga 2020)? These are various scales that we are working with. But we were very clear that we were supposed to deliver under administrative provincial boundaries, and at the transboundary level with Afghanistan.

That was the clarity with which we approached our objectives,

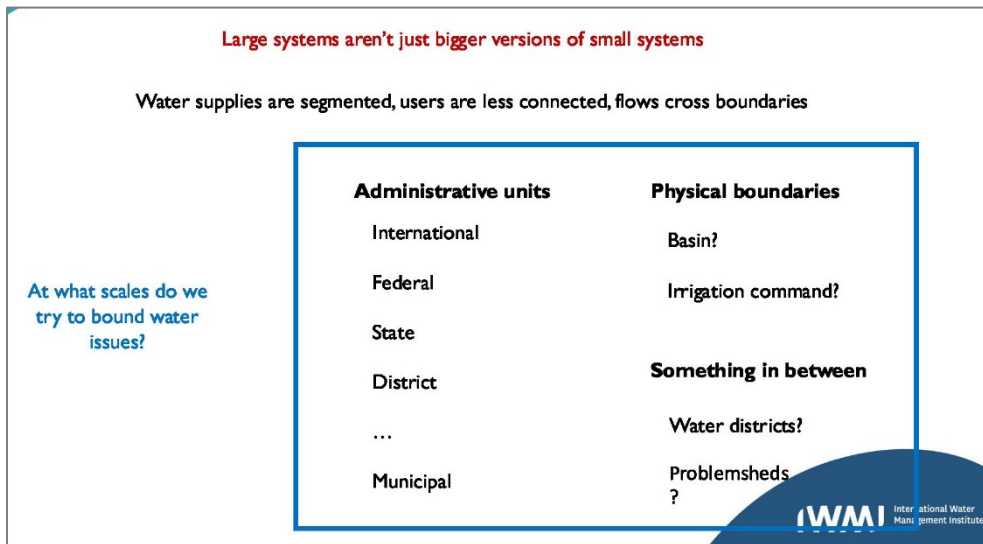


Figure 2. Scaling up water governance.

System change approach in the water sector

The system change approach that we followed was to begin by trying to raise awareness about the issue that we were trying to solve through our interventions. We involved government, private sector, and other types of stakeholders in sessions to empower them by raising their awareness, and then we started focusing on building their capacity, both at the institutional and the organisational levels. Finally, over time, we built linkages (Figure 3).

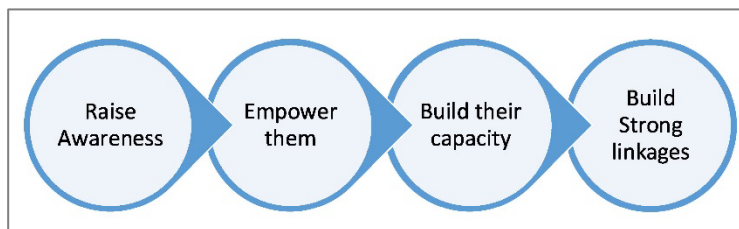


Figure 3. System Change approach in water governance.

For capacity building, which is the focus of this talk, the first question is: what kind of capacity are we trying to build: on the individual level or the institutional level (Figure 4)? We were very clear that we had to build the capacity of both. At the institutional level, since it's a governance-type activity, people have to work with tools, techniques, laws, policies, and their implementation frameworks for implementation and modernisation of their systems, which are pretty broad in the irrigation infrastructure in Pakistan. At the individual level we held many training sessions: technical, managerial, induction and refreshers.

Individual Capacity Building vs Institutional Capacity Building ??	
Individual Capacity Building Technical Training Managerial Trainings Induction Trainings Refresher Courses	Institutional Capacity Building Development of tools and techniques Laws and Policy implementation Training of Trainers Seminars/workshops automation/modernization of systems Updating rules/procedures

Figure 4. Capacity building – of whom?

Identification of stakeholders and types of capacity building

Next, we started mapping all the stakeholders. If you are to improve water governance in a large area where you have multiple rivers, the main custodians are the public sector organisations and allied entities. Also, the private sector (for-profit and not-for-profit organisations) and the farmers who were the basic custodians whom we wanted to influence. Also, academia was involved, to provide education to their graduates (Figure 5). We created a lot of networks. The righthand side of Figure 5 shows the kinds of interventions we set up with all of them at different levels.

Stakeholders Mapping and Interventions	Stakeholders	Interventions
IWMI works collaboratively with key stakeholders in the public sector (GOP, State Govs) and in partnership with the private sector (for-profit and not-for-profit including civil society organizations, farmers and academia) to create an environment that is more conducive to the growth of agriculture sector in Pakistan. IWMI also creates professional networks , and incentives for the private sector to take advantage of reforms and to undertake activities that introduce and demonstrate innovative practices in agriculture management, planning and development.	Farmers and Community	Productivity Enhancement Farm practices Water Efficiency Trainings and exposures
	Agriculture and Water System Operators	Tools and Technologies Models and analytics Information Systems Capacity Strengthening Customized trainings Peer to Peer Learning
	Decision Managers and Policy Makers	Information and Assistance Decision Support Systems Exposure Visits Policy Briefs and on demand advisories

Figure 5.

Capacity building interventions at different levels

For individual capacity building, our first focus was the farmers. To give you some background, this is a new greenfield area of around 77,000 hectares being developed since the Gomal Zam Dam was built in 2011. We introduced micro drip irrigation kits and tunnel farming type structures (Figure 6). Then, looking at the value chains, we saw there were issues with silage, so silage-making techniques were introduced for the first time, as were surface irrigation techniques and a focus on organic farming through bio-fertiliser wells. We made these technical interventions with the farming community directly, and we engaged some associations, but they were

not very effective at the very start. We also ran awareness campaigns around the larger issues of climate change shocks, building their capacity to deal with those (Figure 7).



Figure 6.



Figure 7.



Figure 8.

For technical training, we approached all the stakeholders – public sector, private sector, universities – and started running training workshops with them on modelling aspects and gender mainstreaming activities (Figure 8). At the decision makers level (Figure 9), the executive management training programs were about leadership, procurement processes, value chains. They were delivered in partnership with a major Pakistani private sector university (LUMS – Lahore University of Management Sciences).



Figure 9.

The interesting part was at the institutional level. The national water policy of Pakistan was passed for the first time in 2018, and the provinces were grappling with implementing the various clauses in the policy. Working in KP province, we automated the whole flow measurement system in the main canals, to deliver on the policy. They had been lacking that institutional capacity. KP was the first province to have that system. With their support and continuous engagement (to deal with issues), finally we have launched that system (Figure 10).

Revisiting Telemetry in Pakistan's Indus Basin Irrigation System
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Abstract

The Indus Basin Irrigation System (IBIS) lacks a system for measuring canal inflows, storages, and outflows that is trusted by all parties, transparent, and accessible. An earlier attempt for telemetering flows in the IBIS did not deliver. There is now renewed interest in revisiting telemetry in Pakistan's IBIS at both national and provincial scales. These investments are typically approached with an emphasis on hardware procurement contracts. This paper describes the experience from field installations of flow measurement instruments and communication technology to make the

- Many data dissemination and display options e.g. SMS, display screens, customizable detailed reports.
- IRSA can maintain water accounts of provincial share much conveniently and accurately based on Indus Telemetry data.
- A telemetry system can foster trust amongst provinces on water monitoring by adopting QA/QC procedures.

Improved Water Accounting
Efficient Water Resources Management

Figure 10. See Bhatti *et al.* 2019.

Other data interventions

Their weather forecasting system had been relying on obsolete data. During the project we installed around six weather stations for monitoring the weather.

One of the major institutional interventions was to digitise the water allocation system, which is called ‘Warabandi’ in the vernacular. This was the first time a whole system of information had been implemented about the water distribution in the command area of the Gomal Zam Irrigation System, including acquiring flow data from the small distributaries and canals. We developed all these systems in collaboration with the partners, and we delivered them and they are now in use.

So that is how you can make a change in the way processes are being carried out, and how you can influence governance.

KOBO Toolbox for e-inspection of irrigation infrastructure

- Kobo Toolbox is a data collection, management, and visualization platform used globally for research and social good.
- Kobo Toolbox enables inspections without internet in the field and it can capture pictures, videos, location information and digital notes while in field.
- GoKP-ID has used KOBO Toolbox for e-inspection of irrigation infrastructure.
- GoKP-AgD is using KOBO Toolbox for inspection in GZDCADP
- GOKP-IT Department has hosted database to archive reports of KOBO application by GoKP departments

Finally, also at the institutional level, we introduced e-inspections for maintenance and repair works, using the KOBO Toolbox of open-data type tools (Figure 11). Every year now, institutions issue a letter before the maintenance and repair season saying that staff have to use the KOBO Toolbox. That way, institutions can monitor that their staff are actually going into the field, taking pictures, recording videos and making audio notes. There is transparency, which is a key aspect of improving governance.

Then we realised that KP province was a bit lacking as compared to the Punjab province for instance. So, we brought professionals from KP to Punjab to learn from their peers in the equivalent departments. Learning from their peers and discussing how they are carrying out their business has been a great success. They identified champions in the respective departments and the collaboration has delivered good outcomes.

Figure 11.

We have engaged with universities. The Vocational Training Institute was engaged to train their faculty on design of drip irrigation systems and make it part of its curriculum. We also developed a complete course on the impact of climate change with the University of Peshawar in KP province, and now they are launching a diploma program (see Figure 12). As researchers I think it is our responsibility to bring these contemporary issues to people’s attention.



Figure 12.

Seminars and Dialogues

- Climate Change
- Conference and Dialogues on Water related Themes
- Hill torrent management

Developing Academic Material

- First ever Post Graduate Diploma course co-development with University of Peshawar in **Climate Change Studies**
- **Vocational Training course** development for TEVTA for male and female farmers/technicians

There was good support for the implementation of the KP Water Act 2020. There had been a series of water Acts being rolled out in Pakistan in each province, and they were not very clear what to do next. Our Organizational structure strategy document is helping to operationalize all these tools and techniques they need in order to implement the Act (see Figure 13). These were developed to strengthen what they want to achieve. Advisory services are very important, and we send them directly to the farmers as well as to the departments.

Support for the Implementation of KP Water Act 2020

- WMfEP developed the KP-Water Resources Regulatory Authority “**Strategic plan and organization structure**”
- WMfEP developed the **Resourcing Plan** for the KP Water Resources Regulatory Authority through a PCII document
- WMfEP established 02 **Resource Rooms**
- WMfEP developed the **ICT – Investment Plan** for the GoKP Irrigation Department

Figure 13.

Collaboration with Afghanistan

The last component was with Afghanistan. Pakistan has a formal arrangement with India for exchanging waters of the Indus Basin’s six rivers. However, there is no similar mechanism with Afghanistan. Therefore, we first checked with the Ministry of Water Resources to find out if they had the right information to engage with Afghanistan on this matter. There was nothing. So we developed a complete book on the three main rivers that Pakistan shares with Afghanistan (Shah *et al.* 2023), and it was launched during the course of the project. It provides the baseline data (biophysical and social) needed for meaningful engagement between the two countries. We also carried out exposure visits with people from the relevant ministries to areas like Central Asia, South Africa, to let them see how those countries are dealing with the issues of transboundary water resources management. Figure 14 shows part of a website that we will soon launch – a knowledge platform – that gives all the necessary information on the rivers between Afghanistan and Pakistan.

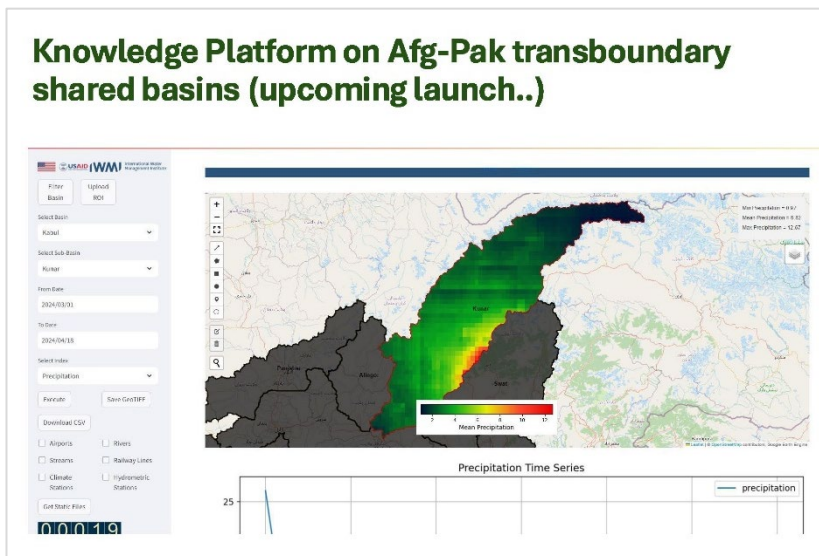


Figure 14.

In summary, I have given you some practical examples of how, with a package of initiatives, you can influence governance. It entails all these kinds of efforts.

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Dr Shah is a water governance professional with over 19 years of experience in conducting applied research for development projects in the South and Central Asian regions. Based in Lahore, Pakistan, Dr Shah's research focuses on the water security issues at transboundary/national levels, climate smart agricultural interventions to improve water productivity and food security, automation systems for flow measurement and solar based irrigation systems for agricultural resilience. Dr Shah is currently Chief of Party for a large USAID Project with IWMI implemented in Pakistan/Afghanistan and Country Project Lead for a regional South Asian project on Solar Irrigation for Agricultural Resilience funded by SDC. Dr Shah is also IWMI Team Lead for Central Asia and MENA regions and Project Steering Committee Member for "PEER2PEER International Convergence Research Networks in Transboundary Water Security" funded by NSF. Apart from this current portfolio of projects, Dr Shah has successfully implemented multiple projects funded by USAID, World Bank, FCDO, ADB and other donors. Dr Shah has more than 20 research publications in reputed international journals to his name. He is also the Lead Editor of the book *Afghanistan-Pakistan Shared Waters: State of the Basins*. Dr Shah holds a PhD in Management (Water Governance) from the Lahore University of Management Sciences, Pakistan. He has presented his research and participated as guest speaker/panellist in more than 20 countries in the world.