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RETHINKING INSTITUTIONAL AND ORGANIZATIONAL STRUCTURE TO IMPLEMENT NATIONAL WATER POLICY GOALS

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By:

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Abstract

A paradigm shift in water resource planning and management in Pakistan has been envisioned after the introduction of the National Water Policy (NWP, 2018). The water resource is primarily planned and managed with a focus on agriculture use; and now in view of NWP, it requires rethinking in the context of the Integrated Water Resources Management (IWRM) framework to achieve its goals. This also needs to review the role and arrangement of institutes at federal and provincial levels, which are directly or indirectly involved in the planning and management of this resource. In this article, we have reviewed the water resources priorities set in the National water policy and assessed them with the institutional arrangements to come up with a framework, which can be reformed/adapted to implement the policy goals. In order to develop an institutional framework, we map the water policy priorities to address the questions of what to implement, who to implement; and how to implement

Introduction

Water resource is facing huge stress due to the climate change, increasing population and competing demand for domestic and industrial sector. The projection of these demand in future indicates water scarcity in the Pakistan (Reinsch, 2005). Pakistan is dependent on the agriculture, and 54 % of its labor is directly or indirectly associated with agriculture sector (Yu, 2013). Water is the key input for agriculture production, and its scarcity will lead to decrease in the food production, increase in the poverty and ultimately lead to unsustainability in the economy. Sustainable water management is essential for the economic development of the Pakistan, and for sustaining the livelihood of the people.

In the wake of above situation, the Prime Minister of Pakistan and the four Provincial Chief Ministers of Provinces, with the commitment and intent to achieve water security for the people of Pakistan, signed the Pakistan Water Charter on 24 April 2018 along with the approval of the National Water Policy (NWP) under the auspices of the Council of Common Interests (CCI).

The NWP requires comprehensive irrigation water management (IWM). It encourages the provinces to develop their water policies, strategies, and action plans matching with the food production requirements with foreseeably less water available for the sector. National Food Security Policy (2018) identifies challenges as shrinking water and land resources (freshwater availability, saltwater intrusion, and land degradation), inefficiency in water use, and low agricultural water productivity and weak groundwater management in agriculture.

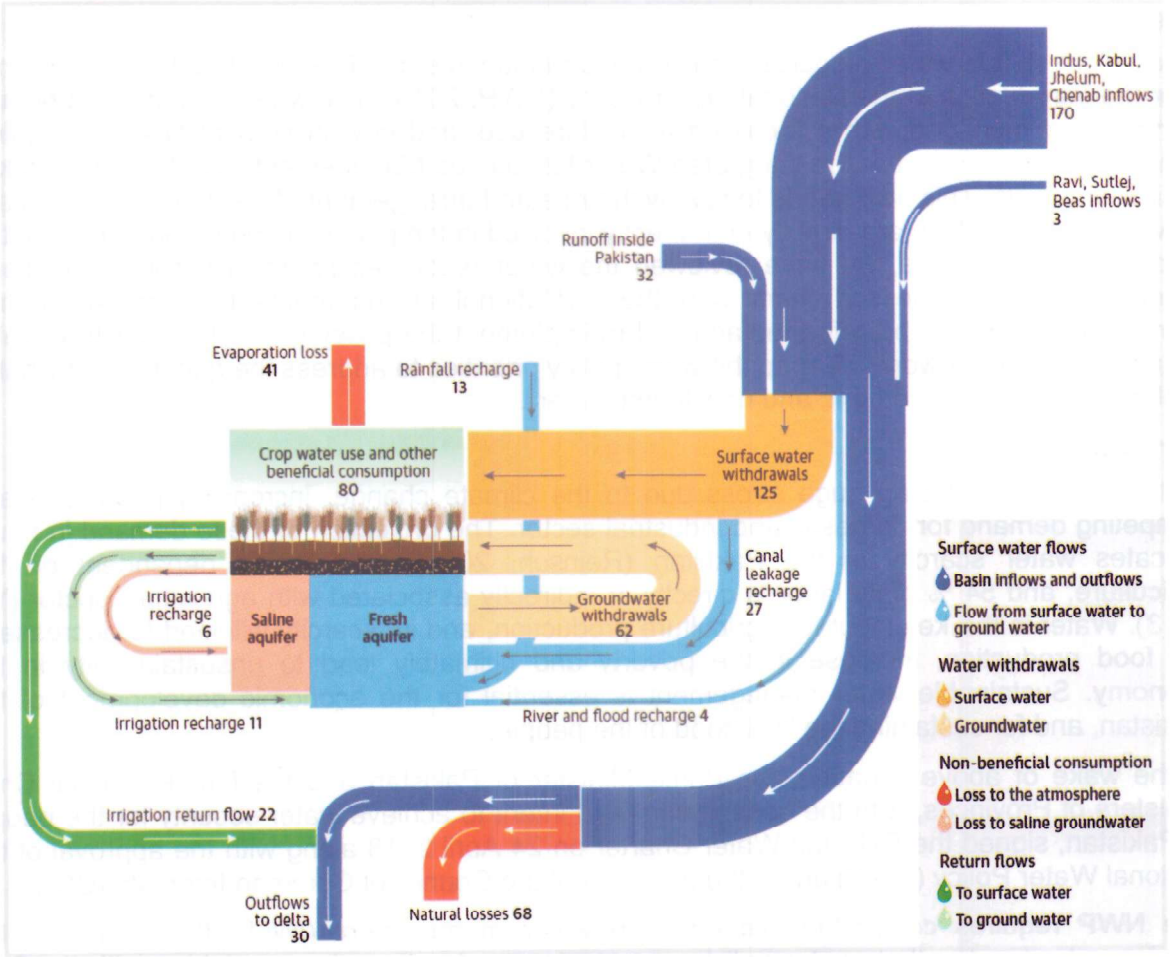
Effective implementation of the NWP, matching with food security requirements of the country, needs enabling institutions, clear roadmap, appropriate staff and farmers' capacity. IWM and related research lacks innovation and knowledge solutions. **A vibrant institutional and**

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organizational structure is needed to meet the future challenges of IWM and food security.

Water availability and use in Pakistan

Out of the total surface water available i.e. 205 billion cubic meter (BCM) - majority comes from Indus, Kabul, Jhelum and Chenab river (Figure 1). The majority is diverted to canals which is primarily used to fulfil the crop water requirement, and other losses as evapotranspiration and leakages. On average (1975-2016) about 30 BCM per year is released to the delta. It is estimated that 62 BCM of groundwater is withdrawn groundwater system, which is recharged primarily (i.e. 44 BCM 70 %) by seepage from canal and irrigation.



Source: Young et al. 2019.

Figure 1: Annual Water balance Indus basin Pakistan (young et al. 2019)

Presently, the majority of water use is in the agriculture sector. But recent estimates suggest that in the future domestic demand will also rise to a significant level, which will ultimately create competition for water use between agriculture and domestic use. Table-1shows estimated for domestic demand. It suggests that in 2050 the domestic demand in Pakistan will rise to 10.36 BCM. Most of the domestic demand in the major cities and rural areas in Pakistan is fulfilled by the groundwater (except few exceptions as Karachi, Islamabad, Hyderabad). This increase will ultimately put pressure for sustaining the groundwater resource. The 80 percent demand of the

industrial sector is also dependent on the groundwater. It is estimated that this demand may also rise to 8.4 BCM till 2050, if industrial growth take place (Amir and Habib 2015).

Table-1: Water demand estimate (Lytton et al 2021)

	Annual domestic water demand, 2017 (BCM)			Projected annual domestic water demand, 2050 (BCM)		
Description	Urban	Rural	Total	Urban	Rural	Total
Pakistan	3.31	2.17	5.48	7.70	2.66	10.36
Balochistan	0.15	0.15	0.30	0.46	0.16	0.62
FATA	0.01	0.08	0.09	0.19	0.06	0.25
KP	0.25	0.41	0.66	1.13	0.39	1.52
Punjab	1.77	1.14	2.91	4.08	1.41	5.49
Sindh	1.09	0.38	1.47	1.77	0.61	2.39
Islamabad	0.04	0.02	0.06	0.07	0.03	0.10

Source: Water demand estimated from population figures shown in table 2.1, and water demand as per Pakistan's National Drinking Water Policy (Government of Pakistan 2009).

Note: BCM = billion cubic meters; FATA = Federally Administered Tribal Areas; KP = Khyber Pakhtunkhwa.

Urban water demand = 120 liters per person per day, rural water demand = 45 liters per person per day.

Water policies, governance and institutional evolution in Pakistan

Pakistan's water related policy ecosystem started with the political and administrative division of the Indus Basin into two independent states—namely Pakistan and India. The journey started with water sharing conflict between two parts of the Basin. Before that both parts have only experience with water related polices and governance regimes, limited to the bureaucratic control of water through canal and drainage act 1983. At the time of this transboundary conflict international practice of water sharing is also in not much appreciated in global arena. The first water related policy in this regard is Indus Water Treaty (IWT) which Pakistan negotiated with its counterpart. After that much of the water related decision making is taken care by WAPDA—a newly established institution through presidential order, which made the water a federal subject in contradiction to provincial matter—as discussed in the Government of India Act 1935. After the IWT, second major water related policy is inter-provincial water distribution agreement termed as Water Apportionment Accord (WAA). Indus River System Authority (IRSA) was established based on WAA clause 13 – with the role of monitoring and regulation the distribution according the WAA allocations for the provinces. National Water Policy (NWP) 2018 is a first attempt in the direction of water cycle management approach through a comprehensive national level policy. The current NWP is a long-awaited document in the history of Pakistan; it has been attempted several times, but not approved until April 2018. Finally, in 2018, the NWP was approved by the Council of Common Interest (CCI) and is now in its implementation phase.

Figure-2compile the chronology of physical and soft interventions during the colonial, post-colonial, pre-IWT, and post-IWT periods in the Indus Basin. Physical intervention in the Indus Basin was concentrated before the IWT, specifically, before the 1947 partition. After independence, state institutions have continued this supply-driven path and added several irrigation projects to the list, as shown in Figure-2a. Policy intervention has been concentrated in the last two decades, as shown in Figure-2b. This policy focus has been motivated through the external pressures of financial institutions and been implemented via interactions of international environmental organizations with different state departments.

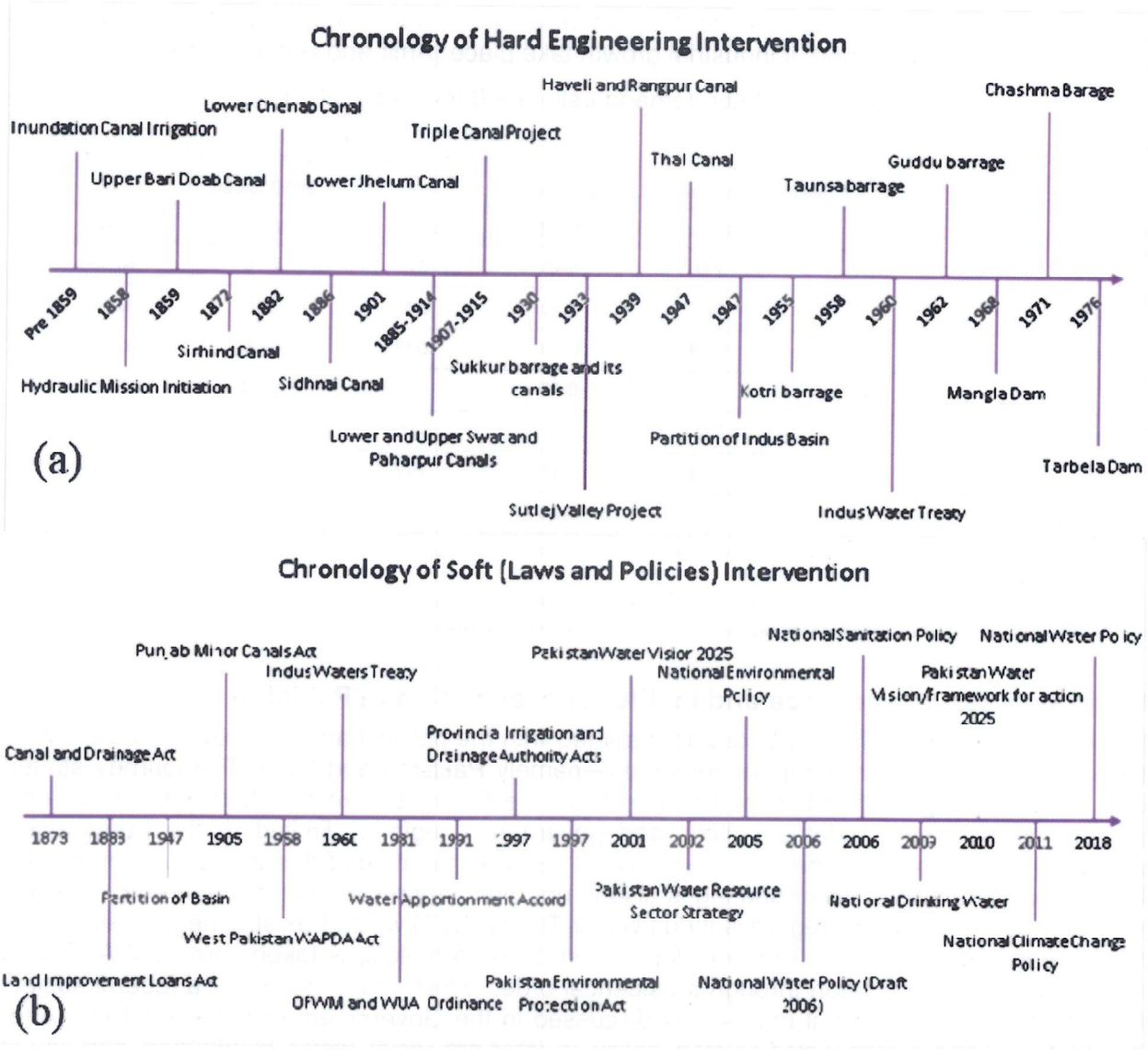


Figure-2: Chronology of the hard and soft interventions (Arfan et al 2020)

Strategic priorities, planning principles and objectives of NWP

National water policy is based on the principles of equity, access to water as human right, resource use efficiency, innovation and farmer participation for canal area development (Figure-3). In NWP, conservation and efficiency, storage, leveraging the technology, renewable energy, Integrated water resources management and comprehensive regulatory framework are identified as the strategic priority areas. As per objectives, policy emphasize strongly on the environmental sustainability through increasing the water efficiency and conservation using innovative and practical solutions via participatory decision making process.

In order to sustain the environment, NWP focuses on watershed management, ecosystem management, flood and drought management, securing the Ramsar sites, preserving the delta, and sustainable withdrawals from the groundwater. Policy guides towards sustainable water use, optimal utilization of reservoirs, water reuse and behavioral change w.r.t to water use. The bigger goal of improving the availability, reliability and quality of fresh water, and increasing the food and energy security – policy emphasizes on exploring the innovative options as

hydropower development, using underutilize resources as flood water, rainwater and reuse of waste water. Along with environmental sustainability and improving the access to water, policy also guides towards efficient irrigation water management. Its focuses on participatory irrigation management and stakeholder based canal command development to promote long term sustainability of the irrigation system

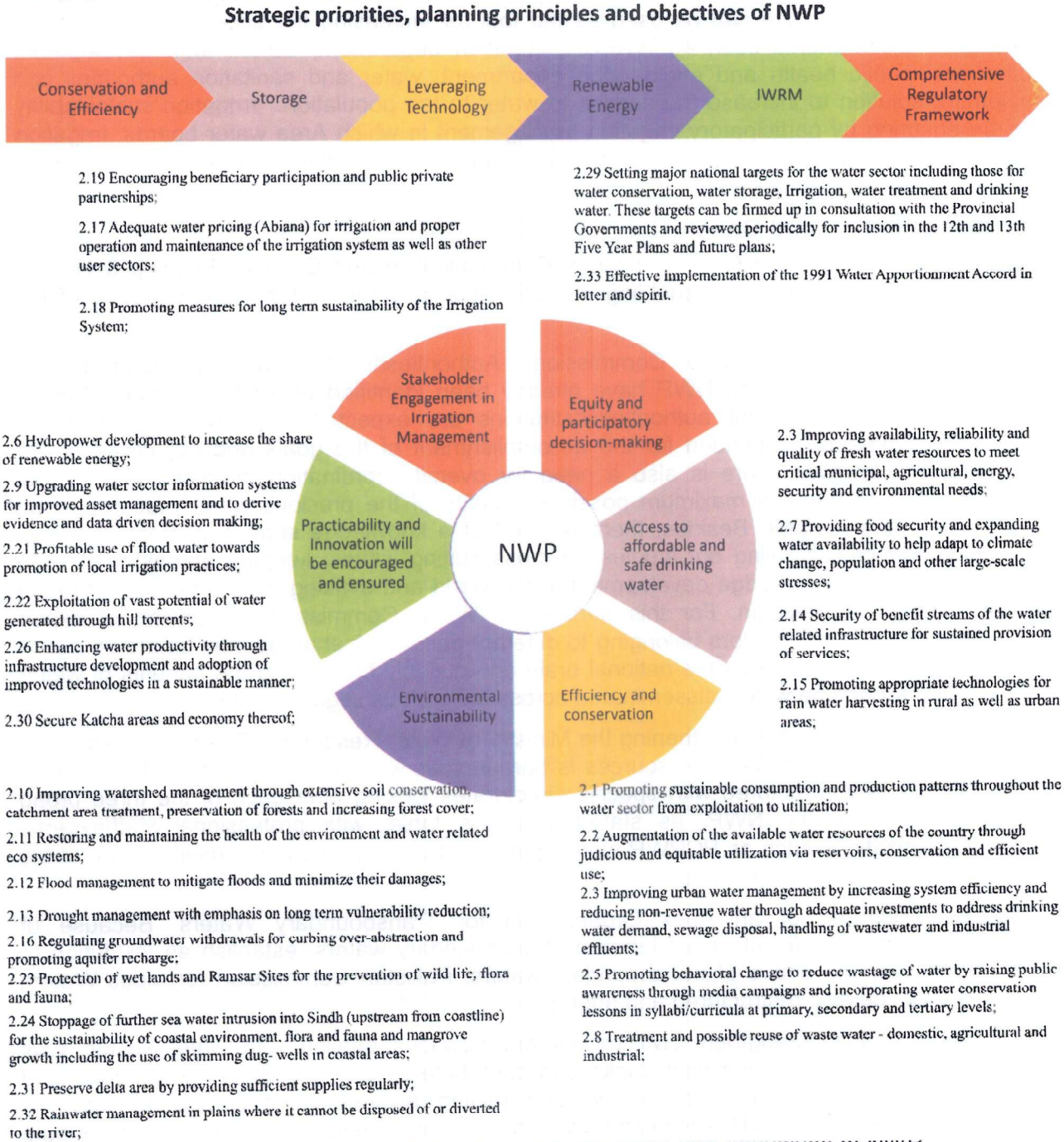


Figure-3: Strategic priorities, planning principles and objectives of NWP

Action Framework for the Implementation of NWP

As per above discussion, we can divide the NWP guidelines in three major thematic areas i.e. (1) Environmental sustainability;(ii) Improve access to water; and (III) Irrigation system

sustainability. Water conservation and efficiency is proposed as the tool to ensure the environmental sustainability. There are multiple institutions who can implement solutions to achieve this target as environmental protection agency, on farm water management, agriculture department, agriculture department, irrigation department and relevant development sector organization. Increasing the existing storage, efficient reservoir management, rainwater harvesting and water use can be used as the tool for increasing the access to water to the population. Departments such as WAPDA, irrigation department, Barani area development authorities, public health and engineering department, water and sanitation authorities can implement solution to increase the access to water to the population. Irrigation sustainability can be ensuring by participatory irrigation management in which Area water boards, irrigation department, Irrigation and drainage authorities can implement the collaborative solution for sustaining the irrigation system.

Recommendation and Conclusion

Alongside with Information Dissemination & Communication and Capacity Building & Human Resource Development, some enabling institutional arrangements for implementation of the NWP are proposed below:

1. Establishment of a Water Commission: Authorities/Intuitions directly responsible for implementation of the NWP have already been identified under the caption "Who to Implement". Relevant authorities/institutions are expected to carry out institutional improvements as needed for the accomplishment of the goals and objectives of the NWP. However, there is also a need for overall coordination, harmony and mutual support to harness maximum possible benefits of the precious water resource in an integrated manner. Besides, there is need of a knowledge sharing platform to share experiences, carrying out studies on cross cutting issues, keeping abreast with case studies and knowledge development in the world and thinking together on water future situation in Pakistan. For this purpose, a Water Commission comprising of expert members in key sectors belonging to different geographical areas may be set up purely as a Think Tank --- as the national brain on equitably harnessing the benefits of water. Their reports be widely disseminated across the various segments of society.

2. Restructuring and Strengthening the Ministry of Water Resources: The present structure of the Ministry of Water Resources is bureaucratic with very thin staffing. The Ministry should be restructured with specific directorates looking after each of the three broad areas under the NWP, as stated in above table, with professional staff/experts. Organizations such as PCRWR working in silos be integrated in the main stream of the Ministry of Water Resources.

3. Establishment of an Apex Organization for Transboundary Waters. Because of Pakistan's significant dependence on transboundary waters, establish an institution to look after the affairs of transboundary waters. Pakistan Commission for Indus Waters (PCIW) be also restructured and appropriately staffed.

4. Support and Strengthen Civil society organizations dealing with water sector. Civil society, academia and think tanks can contribute by generating new knowledge and perspectives, research, advocacy, and raising awareness in pursuance with the objectives of the NWP. They can be watch-dogs for implementation, and also contribute by building a sound knowledge-base in support of decisions, strategies and tools for the implementation of the water-related interventions.

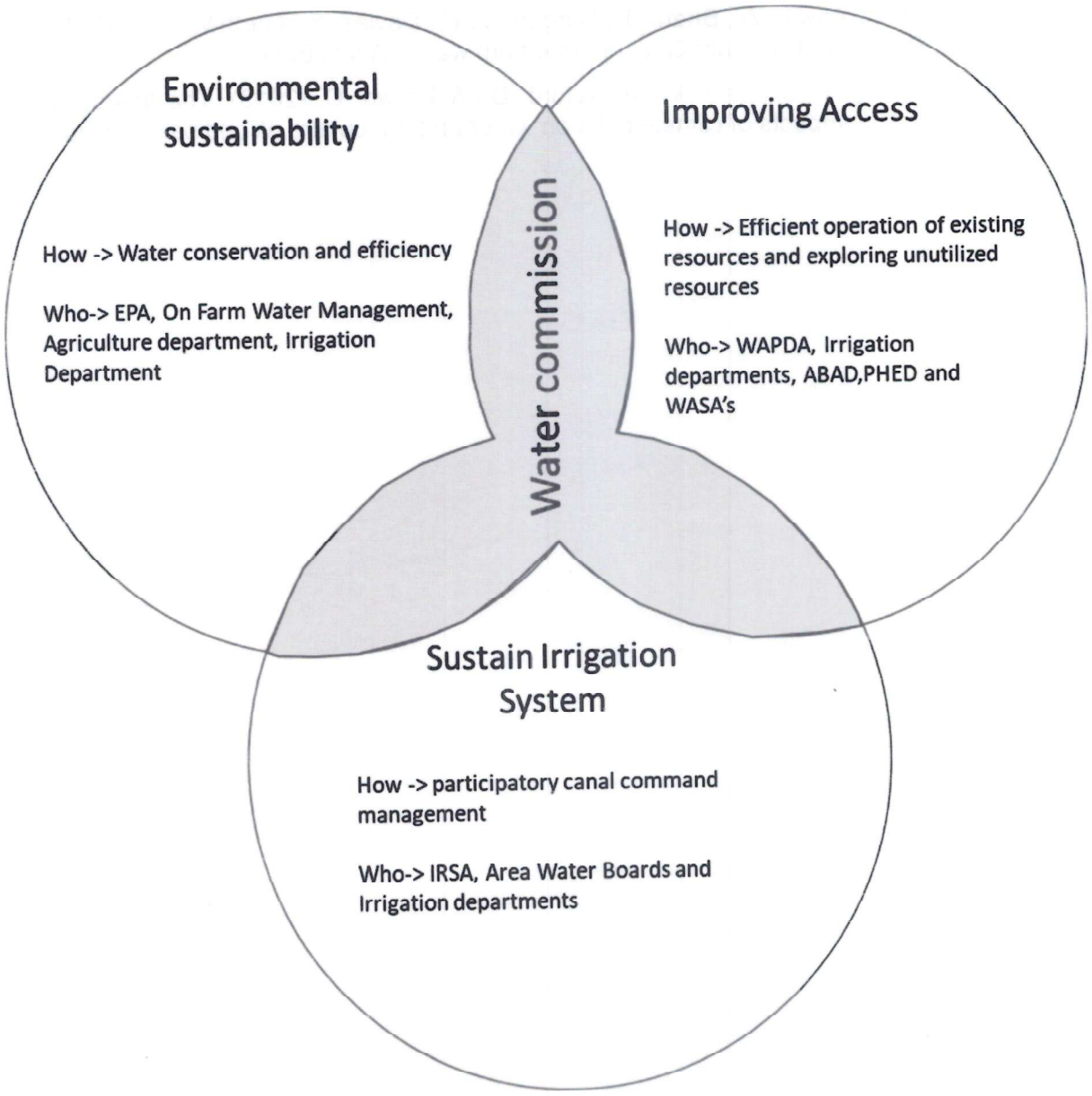


Figure-4: Proposed framework for implementing NWP goals

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