Chapter 3

Irrigation Water Laws in Pakistan

Syed Hamid Hussain Shah and Bagh Ali Shahid

Abstract

Water has been a key ingredient in the human settlement, agricultural and socio-economic growth of the Indus Basin. Increase in population, put the pressure on the demand of water and created the water scarcity in the sectors of agricultural, industrial and domestic. As water scarcity increased, it not only became more crucial input into the economic well-being of Pakistani citizens, but also increased competition among various users and other stakeholders to achieve as much control on the water as possible. Consequently, issues emerging from management of such a system established greater need for framing rules and policies to run the system efficiently. Vested control of water is a valuable transferable right. The specifics of who controls and transfers water and who receives it along with the conditions for its use, are the essence of Pakistani water law. Water laws in Pakistan are usually overlooked and are left to be learnt through experience, which is a high cost option for the farmers and professionals. Recognition of water rights as well as their effective implementation is important for effective management of the irrigation system. Thus, this chapter has been designed to explain water laws and doctrines, including riparian and appropriate doctrines, water allocations through various accords and treaties and operational rules and policies so that each user and stakeholder understands the rights, provisions and to run the system smoothly. This

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chapter categorically explains water rights, including the rights of the way for water conveyance, method of appropriating water, and protection of water right, etc.

Keywords: Water Laws, Policies, Water Rights, Riparian, Legal Framework, Treaty, Accord and Right-of-Way

Learning Objectives

- Understanding the reasons and background of signing Treaties and Accords and their consequences on the irrigation system at national and International levels.
- Updating one’s information on water laws, according to the latest recommendations to promote the agricultural activities leading to enhanced the water productivity.
- Professionals and farmers involved in the use and management of irrigation water must be aware of the policies, rules and regulations of irrigation system operation.
- Planning and design of irrigation facilities must be based on true insight of the laws governing the basic infrastructure and its operational characteristics.
- Study of water laws gives insight to the readers about their rights as well as the rights of the others, in exercising operational rules of the system during water conveyance and application to their fields.
- Awareness of operational rules among the administrators and users minimizes the conflict opportunities. Therefore, all the stakeholders, including policy makers, irrigation managers and farmers, of the system, must study and adhere to the permissive rules of the system.
- Water laws in Pakistan are usually overlooked and are left to be learnt through experience, which is a high cost option for the farmers and professionals. This book will facilitate to learn laws and policies of the Government before implementation.

3.1 Introduction

Water has been a key ingredient in the human settlement and economic development of the Indus Basin. As water scarcity increases, there is a growing recognition that it will remain one of the crucial inputs into the economic well-being and quality of life of Pakistani citizens. Vested control of water is, thus, a valuable transferable right. The specifics of who controls and transfers water and who receives it along with the conditions for its use, are the essence of Pakistani water law. In addition, how and where this resource is used, will influence the economic development of the users, as surface waters are shared among many shareholders. In fact, distribution of water among various users has provided the basis for entering water treaties, accords and ordinances between countries, provinces and groups of farmers, such as Indus Water Treaty (1960), between Pakistan and India, Water Apportionment Accord (WAA) in
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1991 between four provinces of Pakistan and PIDA Ordinance (1997) between farmers.

In the 19th century British engineers used the water of Indus Basin for irrigation purposes before development of the existing irrigation system. Inundation canals were used to divert water supplies from rivers during flood periods without any diversion head works. Management of these canals was done by the local farmers, societies, or states.

Since mid of the 19th century irrigation system was progressively improved by new irrigation methods and diversion works on rivers. Numerous agreements and treaties were taken on river-water sharing. Among these the most significant were IWT (1960) which was settled among Pakistan, India and WAA (1991) which was promised among the four provinces of Pakistan.

At the time of independence (1947) there was world’s most developed irrigation system. The system commanded 37 million acres of land with Indus Rivers. The total available water was allocated to princely states and provinces on equity bases. The Indus Basin Irrigation System comprises of five main tributaries of the main Indus River in the east side, namely: Jhelum, Chenab, Ravi, Beas, and Sutlej. All these tributaries make junctions at different sites and finally at MithanKot, Pakistan site river Chenab the combination of all four tributaries fall in the Indus River and dumped into the Arabian Sea in Karachi. The Indus Basin covers nearly 365,000 square miles of land. Its major part lies in Pakistan and rest of it is part of other countries like India, China and Afghanistan.

In 1947 in Pakistan only the irrigated area was 31 million acres out of 37. The dividing lines at the time of separation of both countries (Pakistan and India) were drawn irrespective of the existing irrigation networks.

3.2 Water law Doctrines in Pakistan

Water laws in various parts of Pakistan are based upon one or both two general doctrines: Riparian rights and Prior appropriation.

3.2.1 Riparian Doctrine

Riparian refers to that belonging or relating to the bank of a river. An owner’s land may be riparian to a river out to the boundary of the watershed of that river. However, land merely adjoining riparian land is not riparian to the river (Trelease, 1967; Sax, 1965; Davis, 1971).

A riparian retains his right to the water regardless of whether or not the use is made of the water; thus, the riparian owner can commence his use at any time and requires that his right be fulfilled. It is obvious that system will work only in those regions where there is adequate water to supply the needs of the users. Due to the scarcity of the water, this doctrine is read mostly in books, but not practiced in Pakistan. The riparian doctrine is also discussed in the Indus Water Treaty section 3.4.
3.2.2 Appropriation Doctrine

Prior appropriation water rights/appropriation doctrine is a system of allocating water rights from a water source that is markedly different from riparian water rights (Sax, 1965; Davis, 1971). Water law in Pakistan generally follows the appropriation doctrine instead of riparian rights which developed due to the scarcity of water in that area.

3.3 Acquisition of Water Rights

The acquisition of water rights means that all the natural streams having flowing water were declared to be the property of the public, and it was dedicated to the use of the people of Pakistan.

3.3.1 Right-of-Way for Water Conveyance

The right of way through the lands for conveyance is applicable to every person owning a water right or conditional water right, so that efficient utilization of water can be increased by increasing the irrigated command area of deprived water resources. The government can also take land for conveying water without paying compensation (Sax, 1965; Trelease, 1967; Davis, 1971). Application of this doctrine is seen frequently in many projects, like in the designing of irrigation projects in the un-gauged basins or in the development of new irrigation water courses in the areas where there is deprivation of this water course. This also applies to the main watercourses at the watercourse command where the watercourse is a property shared by the shareholders of the command.

3.3.2 Method of Appropriating Water

In Pakistan, there are two requirements to be met to acquire a water right. First, there must be a sharing of the water and, second, it must be applied to beneficial use. According to the latest developments in the field of irrigation science, water is allocated to the farmers according to the crop water requirements. This criterion has improved the method of appropriating water.

3.3.3 Restrictions on Right to Appropriate

The right to divert the inappropriate waters of any natural streams to beneficial uses shall never be denied. However, the right of appropriate water is limited to the situation (i) if there is no inappropriate water available from the proposed source, (ii) if the granting of the right would harm an existing water right, (iii) if the proposed appropriation is contrary to the public welfare, and/or (iv) if the right is limited based on the time during which the water may be used (Sax, 1965; Trelease, 1967). Regarding this restriction, we can say that this law would sustain on longer terms land and water resources. For efficient management of saline irrigation water among different farms along the river basin, a conceptual model has been developed by Ben Gal et al. (2013) which is application of this doctrine.
3.3.4 **Doctrine of Relation Back**

Relation back has been defined that relation by which appropriation of water relates back to the time when the first step to securing that appropriation was taken, if the work from that step on was prosecuted with reasonable diligence (Trelease, 1967). This doctrine keeps the appropriator on track. With the passage of time, changes in land cover depending on the market demand would affect the water rights of the appropriator.

3.3.5 **Elements of Appropriation Right**

Various elements of Appropriation rights are discussed below to regularize the priority of using water. Appropriation of right, in fact, minimizes the water losses by fixing the turn of water use and minimizing the chances of disputes.

3.3.5.1 **Priority of Right**

A prior appropriation doctrine ensures the exclusive right to divert water from a source when the supply of water is not adequate for the needs of all claiming the right to its use. This exclusive right depends on the date of appropriation regarding the dates of other appropriators. Thus, appropriator with earliest date of appropriation acquires a superior and exclusive right over all others appropriating water from the same body of water. This doctrine is a rough procedure to administrate the water body. The senior appropriator claims water without knowing the actual needs of the water. In this way, senior appropriator wastes the water, which could otherwise be used efficiently by more than one appropriators.

3.3.5.2 **Preferential Uses of Water**

The preferential use system gives the right to the most appropriate use between two same purposes of water. With low stream water, domestic water use takes up top priority, followed by agricultural, manufacturing, and so on (Sax, 1965; Trelease, 1967; Davis, 1971).

3.3.5.3 **Exercise of the Appropriation Right**

Appropriation of Right, in fact, minimizes the water losses by fixing the turn of water use and minimizing the chances of disputes. The user can use the water of its turn or the excess water can be delivered to the next user based on the consent of the user if the user does not need water.

3.3.6 **Efficiency in Irrigation**

In diverting, conveying, distributing and using the appropriation right, the appropriator is held to achieve reasonable efficiency not absolute efficiency. The reason is that due to the losses in irrigation water (conveyance, evaporation, seepage, etc.), the irrigation efficiency decreases. In order to increase the irrigation efficiency, different alternatives have been adopted such as watercourse lining to avoid from seepage, increasing depth of watercourse and plantation around the water course to avoid evaporation to some extent.
3.3.7 Rotational Use of Water

Rotation in the use of water avoids the loss and inefficiency that can result from the continuous delivery to farms of a multiplicity of small heads or streams. The purpose of the rotation is to enable irrigators to exercise their water rights more efficiently, and thus, to bring about more economical use of available water supplies. Regarding the rotation of water, warabandi system is an example and application of this doctrine. Warabandi means fixing of turns of irrigation water for each farmer at a water course according to some criteria. The objective of warabandi system is to provide only that amount of water which enables a farmer to irrigate one third of his cultivable command area during all season. There are two types of warabandi namely “Kacha and Pucca”.

3.3.7.1 Kacha Warabandi

It means a temporary program of fixing water turns, which is arranged by the farmers themselves. Its rotation varies from 10 to 15 days depending on the number of farmers on the watercourse and available time (Qureshi and Zeb-un-Nisa, 1994). In each chak or village, a watch keeper is used to announce the irrigation turn time for the benefits of each farmer by drum beating.

3.3.7.2 Pacca Warabandi

The Kachawarabandi system of water rotation has many problems such as the larger farmers do not care for the irrigation needs of smaller farmers. Consequently, the tail users are the main losers. To overcome this problem, the canal department regulates the supply of water and fixes the turns of each farmer in each crop year, which is called “Pacca Warabandi” system. If any farmer violates this arrangement, he is liable to prosecution under the canal act (Qureshi and Zeb-un-Nisa, 1994).

3.4 Indus Water Treaty

International Bank for Reconstruction and Development and World Bank settled the water disputes between Pakistan and India on September 19, 1960. The transboundary agreement is known as the Indus Water Treaty. It was jointly signed by President of Pakistan Mohammad Ayub Khan and Indian Prime Minister Jawaharlal Nehru in Karachi.

3.4.1 Rationale for the Indus Water Treaty

Immediately after Pakistan came into existence, India stopped the water in every irrigation canal due to the control of the canal regulating structure. Due to this unethical attitude of India, 1.6 MA canal irrigated area of Pakistan was affected. These actions forced Pakistan towards a treaty among countries aimed at joint water allocation.
3.4.2 Pre-Treaty Dialogue

Pakistan claimed that excess water could be allocated among the riparian according to the population and area. This claim was also supported by many treaties, nations, and the provinces. On the other hand, India claimed absolute right of the upper riparian on water than lower (see section 3.2.1) treaty could only be possible if both riparian get same (see section 3.2.1). In May 1948 India restored some water with the concept that Pakistan will not survive without full supply restoration.

In May 1952, negotiations to resolve the dispute, started between both the parties with the assistance of the World Bank, but the discussion was not fruitful. The Indus Water Treaty was finalized 1960 as a result of eight years exhaustive dialogue between Pakistan and India (World Bank, 1960).

3.4.3 Main Constituents for Indus Water Treaty

September 19, 1960 in Karachi, the IWT was signed. There are 12 articles of the IWT and it consist of 8 appendices for detail information of the articles.

3.4.4 Salient Features of Indus Water Treaty

Eastern River’s rights:
(i) India will use the Ravi, Sutlej and Bias water unrestrictedly.
(ii) Pakistan will not claim for the water of River Ravi, Sutlej and Beas.

Western River’s rights:
(i) Pakistan shall receive the water from Indus, Jhelum and Chenab unrestrictedly.
(ii) India shall not take any water from the western rivers (Indus, Jhelum and Chenab).

Eastern and Western River’s rights:
(i) Both parties would have free access to natural river channels for discharge of flood and excess water. Also, any damage to these channels would not be claimed by any party.
(ii) Each party declares that any sewage from the industry will be treated before allowing wastewater to flow in the river to avoid from water pollution.

3.4.5 Post-Treaty Views

According to Pakistan’s perspective, the Indus Water Treaty resulted in some advantages as well as caused several problems.

The following benefits were achieved:
(i) The implementation of the Indus Basin Replacement Plan (IBRP) made both countries independent in operating their supplies after the completion of works.

(ii) It was the responsibilities of both countries to plan, construct and maintain the water project for their own interest (Ahmad, 1993; World Bank, 1960).

(iii) Each country can use the water effectively. Increase in efficiency for storage, transfer and reduction of losses benefits directly to that country.

(iv) The independence afforded by the program has decreased the mutual conflicts and resulting tension between two countries.

(v) Prior to IWT, 80% of the total flows were generated during the monsoon season. IWT increase the canal water diversion due to the construction of reservoir.

(vi) In addition to total withdrawals, water diversions from canals were increased from 67 MAF to 104.5 MAF (Ahmad, 1993; World Bank, 1960).

Defects of the settlement plan:

(i) The flooding reduced or disappeared causes the soil salinity and sodicity problem in the sailab areas.

(ii) The channels become silted up due to reduction in flows in the Eastern Rivers.

(iii) The development of new link canals and reservoirs resulted in additional burden on the maintenance cost of the system (World Bank, 1960; Ahmad, 1993).

3.4.6 Changes in River Flows

Average flows of major rivers of the Indus Basin have been presented in Table 3.1 for 1922-61, 1985-95 and 2001-02 to have insight into water situation before and after the Indus Water Treaty, and into the ensuing scenario.

Table 3.1 Temporal Changes in River Flows

<table>
<thead>
<tr>
<th>River</th>
<th>Average Annual Flow (1922-61) MAF</th>
<th>Average Annual Flow (1985-95) MAF</th>
<th>Average Annual Flow (2001-02) MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indus</td>
<td>93.0</td>
<td>60.25</td>
<td>48.00</td>
</tr>
<tr>
<td>Jhelum</td>
<td>23.0</td>
<td>23.00</td>
<td>11.85</td>
</tr>
<tr>
<td>Chenab</td>
<td>26.0</td>
<td>25.70</td>
<td>12.38</td>
</tr>
<tr>
<td>Ravi</td>
<td>7.0</td>
<td>5.80</td>
<td>1.47</td>
</tr>
<tr>
<td>Sutlej</td>
<td>14.0</td>
<td>5.80</td>
<td>0.02</td>
</tr>
<tr>
<td>Kabul</td>
<td>26.0</td>
<td>22.30</td>
<td>18.90</td>
</tr>
<tr>
<td>Total</td>
<td>189.0</td>
<td>142.80</td>
<td>92.62</td>
</tr>
</tbody>
</table>

Source: Federal Flood Commission, 2010
3.4.7 Discussion and Post-treaty Works in Pakistan

After IWT 1960, both the countries appointed commissioners to the Indus Waters Commission as their respective representatives. In this way, there are two Commissioners who govern the Indus Commission. The main functions of the commission are: (i) to arrange cooperative atmosphere for the successful execution of the Treaty; (ii) to achieve sustainable development of the river waters by promoting collaboration between the two shareholders; (iii) to settle the issues raised by any stakeholder by utilizing all possible options; and (iv) to inspect river flows (for further explanation, please see annexure 1).

3.5 Indus Basin Irrigation System

The irrigation system of Pakistan is one of the largest irrigation systems, providing water to about 42 million acres land. Indus River is the main source of water in the system along with its tributaries (Fig. 3.1). The major reservoirs include: Tarbela, having live storage capacity 6.625 MAF against the original 9.70 MAF; Chasma, having live storage capacity 0.263 MAF against the original 0.70 MAF; and Mangla, having existing storage capacity of 4.54 MAF against the original 5.30 MAF. The total length of the canal system is 64000 km, whereas the watercourses have total length of about 1621000 km (Annual Flood Report 2010).

Source: Annual Flood Report, 2010

Fig. 3.1 Schematic Diagram of Indus Basin Irrigation System
The Indus Basin comprises of about 365,000 miles\(^2\) geographical area (Ahmad, 1993), major portion of which is in Pakistan and the minor areas in Jammu and Kashmir, India, China and Afghanistan. Water in the Indus River system is distributed first among different users like the domestic and industrial users, then for irrigation, and the rest is surplus water. Out of these users, Irrigation is the major user of water as tabulated in Table 3.2

### Table 3.2 Distribution of Water in Indus Rivers Basin

<table>
<thead>
<tr>
<th>Inflow into Indus Basin</th>
<th>142MAF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outflow</strong></td>
<td></td>
</tr>
<tr>
<td>Domestic use</td>
<td>5MAF</td>
</tr>
<tr>
<td>Industrial use</td>
<td>2MAF</td>
</tr>
<tr>
<td>Irrigation</td>
<td>97MAF</td>
</tr>
<tr>
<td>Requirement below last barrage (Kotri) for agriculture, preventing backflow from sea and protecting environment</td>
<td>10MAF</td>
</tr>
<tr>
<td>Possible allowable water use by India</td>
<td>5MAF</td>
</tr>
<tr>
<td><strong>Total usage</strong></td>
<td>119MAF</td>
</tr>
<tr>
<td><strong>Remaining available water</strong></td>
<td>23MAF</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>142MAF</td>
</tr>
</tbody>
</table>

*Source: WAPDA, 2002*

3.6 Water Accord

3.6.1 Historic Developments

- In 1920, British kingdom gathered Punjab, a state of Bahawalpur and Bikaner states to have an agreement known as triple canal project keeping in view the mistrust among these provinces.
- Later, due to less quantity of supply compared to the assumed supply, in 1935 Anderson Committee was formed for the inspection of water distribution. Similarly, Government of Sindh dropped the complaint that Punjab is making project on the Sindh canals.
- To solve the issue a commission was established who presented its recommendations in 1942. Furthermore, in 1968, Governor of former West Pakistan constituted a Water Allocation and Rates Committee to review barrage water allocations, reservoir release patterns, drawdown levels and use of groundwater in relation to surface water deliveries. A report was submitted on July 01, 1970.
- Resultantly a committee (Justice Fazale Akbar) was formulated in October 1970 to give recommendations on the water distribution pattern of the Indus and its tributaries. Its report was submitted in 1971. Unfortunately, no judgment was drawn based on the recommendations of the committee and Govt. of Pakistan distributed the water on ad hoc basis (Ahmad, 1993).
- In 1977, the Government formed another commission with provincial high courts’ Chief Justices being its members and Supreme Court’s Chief Justice
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as head to investigate the problem regarding the water distribution and provide consensus and sustainable solution. Report presented by the commission is awaited by the Government.

- Eventually the Chief Minister of the four provinces resolved the issue. The conclusion was drawn on March 16, 1991, after conducting a series of meetings in Lahore and Karachi (Ahmad, 1993).

### 3.6.2 Purposes of the Water Accord

WAA between Provinces was formulated by the Prime Minister of Pakistan with agreement of Provincial Chief Ministers. It had two important features:

1. In each province, the protection of the existing canal water uses.
2. Insured balance river water supplies among the provinces, keeping in view the flood excess water and future storage requirements.

### 3.6.3 The Water Apportionment Accord, 1991

The Water Apportionment Accord was signed on March 16, 1991 in Karachi at a meeting of the Chief Ministers of the four provinces. The accord describes the shares of the provinces as given in Table 3.3.

The main provisions regarding water apportionment accord (Ahmad, 1993) as under:

1. It was realized that there should be water storages on the River Indus and its tributaries for carrying healthy agricultural activities in future.
2. Provinces are free in making new projects within the allocated water limits.
3. No restrictions are imposed on development of irrigation in Kurrum, Gomal and Kohat basins till the time comes it will affect adversely on the existing uses on these rivers.

**Table 3.3 Apportionment of Water among Different Provinces during Rabi and Kharif season**

<table>
<thead>
<tr>
<th>Province</th>
<th>Kharif (MAF)</th>
<th>Rabi (MAF)</th>
<th>Total (MAF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>37.07</td>
<td>18.87</td>
<td>55.94</td>
</tr>
<tr>
<td>Sindh</td>
<td>33.94</td>
<td>14.82</td>
<td>48.76</td>
</tr>
<tr>
<td>KPK</td>
<td>5.28</td>
<td>3.50</td>
<td>8.78</td>
</tr>
<tr>
<td>Balochistan</td>
<td>2.85</td>
<td>1.02</td>
<td>3.87</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>79.14</strong></td>
<td><strong>38.21</strong></td>
<td><strong>117.35</strong></td>
</tr>
</tbody>
</table>

**Source:** Ahmad, 1993

1. Baluchistan will be restriction free for developing water resources on the right-bank tributaries of River Indus.
2. Need of another national authority named as Indus River System Authority (IRSA) which will overlook and implement this accord, was recognized and accepted.
3. Priority uses of water from existing reservoirs would be for irrigation in all provinces.
(iv) Within the allocated limit of water, the provinces would be free to modify the uses on the bases of system and period.
(v) Water wastages would be avoided with every possible effort. Surplus water might be utilized by another province rendering it with no permanent rights on that water.

3.6.4 Discussion on the Accord

Twelve million acre feet of additional water were allocated through Water Apportionment Accord to the four provinces. During floods (June-September) the surplus quantity of water is available for the period of 70 to 100 days only. Around the year, during non-flood period, the additional allocations may be provided by necessary surplus storages. Provinces will forcibly share the water shortages in the absence of new storages. Thus, it is in the interest of all provinces to develop and efficiently utilize the water resources.

3.7 On-farm Water Management and Water User Association Ordinance

It is an ordinance which is provided for water management at the farm level through efficient utilization of irrigation water and introduction of participatory irrigation system by forming of water users’ associations. This Ordinance may be called as On-Farm Water Management and Water Users’ Associations Ordinance, 1981 (GOP, 1981). Following are the main important extracted points for the on farm water management team to consider for efficient use of irrigation water.

3.7.1 Field Officer to Advise Stakeholders for Watercourse Reconstruction

(i) If the watercourse requires rehabilitation or improvement, the officer can advise the irrigator to complete the task within a specified period.
(ii) Maintenance and reconstruction of watercourse are the responsibility of all the irrigators.
(iii) Field officer may take the necessary action regarding improvement of a watercourse, if the concerned person does not complete the task within a specified period.
(iv) Farmers are allowed for the maintenance and reconstruction of watercourse by making an association.
(v) Field officer may cancel the job of association if it does not complete the work timely.

3.7.2 Future Maintenance of a Watercourse

(i) The association will maintain the watercourse on behalf of all the stakeholders of the watercourse after handover by the field officer to the association.
(ii) The association shall have right to recover a prescribed share of the cost of watercourse rehabilitation.
(iii) If any of the irrigators refuses or fails to pay his share of the cost, it will be recovered by the Field officer as an arrear of land.

3.7.3 Checking of Watercourse Maintenance

The Field Officer (Assistant Executive Engineer) will make a spot-inspection and issue directions for the proper maintenance work.

3.7.4 Formation and Registration of Association

(i) On the basis of mutual co-operation in the reconstruction, maintenance or improvement of the watercourse, a group of irrigators form Panchayat (group of people from the watercourse) known as Water Users’ Association.
(ii) For maintenance, improvement and reconstruction of a watercourse, an association shall apply to the Field Officer on a prescribed form containing such as a list of members with their particulars, list of all irrigators, and bye-laws of the association.
(iii) After receiving the application (mentioned in sub-Sec ii) the Officer will call a meeting of all beneficiaries.
(iv) The Officer will register the association and issue a certificate on prescribed form after being satisfied from all irrigators under the Ordinance.
(v) An association cannot be registered unless (a) members must be 51% of the total irrigators, (b) association formed by-laws are dependable under the government laws, (c) duly elected member and office workers, and (d) account must be in listed bank.
(vi) The decision of the Field officer to grant or refuse registration will be final.
(vii) Field Officer shall decide that a person is an irrigator or not. His decision shall be considered as final.
(viii) A register shall be maintained by Field Officer for the certificates issued by him.

3.7.5 Association as a Corporate Body

Under the Ordinance an association rendered as a corporate body corporate by the name under which it was registered will enter contracts, institute and defend suits and other legal proceedings.

3.7.6 Certificate of Registration to be Conclusive Evidence

A certificate of registration issued to an Association will be conclusive; otherwise it will be assumed that registration of the Association has been cancelled.
3.7.7 Disputes
Field officer will be consulted in case of any dispute among the members (past and existing) of an association, touching business of an association, shall be referred to the Field Officer. The Field Officer may hear the dispute and give his decision, which will be considered as final.

3.7.8 Cancellation of Registration
The registration will be cancelled if the association violates the rules discussed in section 3.6.4. The association will appoint a person to close all the pending matter of the user association under legal action. Additionally, it is under the power of field officer to order the association to hand over all properties provided by any Government agency.

3.7.9 Water Laws

Table 3.4 (a) Main National Legislation Related to the Water Sector

<table>
<thead>
<tr>
<th>Enactment</th>
<th>Year</th>
<th>Responsible Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan Penal Code (Act XLV of 1860)</td>
<td>1860</td>
<td>Federal Government</td>
</tr>
<tr>
<td>West Pakistan Water and Power Development Authority Act</td>
<td>1958</td>
<td>Federal Government</td>
</tr>
<tr>
<td>The Indus Water Treaty</td>
<td>1960</td>
<td>Federal Government</td>
</tr>
<tr>
<td>The Constitution of Islamic Republic of Pakistan</td>
<td>1973</td>
<td>Federal Government</td>
</tr>
<tr>
<td>On Farm Water Management Water Users Association Ordinance</td>
<td>1981</td>
<td>Federal Government</td>
</tr>
<tr>
<td>Water Apportionment Accord</td>
<td>1991</td>
<td>Federal Government</td>
</tr>
<tr>
<td>Indus River System Authority Act</td>
<td>1992</td>
<td>Federal Government</td>
</tr>
</tbody>
</table>

3.8 Canal and Drainage Act, 1873

3.8.1 Historical Overview
The Canal & Drainage Act was enacted in 1873. It was substantially amended soon after its enactment in 1873 and later in 1874. It worked well throughout the colonial rule and only minor changes were made during this period. After Independence, some amendments in the Act were made in 1952 regarding compensation. Thereafter, some other amendments were made at different times, but most of them were minor in nature except the transfer of powers from the Divisional Canal Officers (XEN) under S.68 to Sub Divisional Canal Officers (SDO).
Table 3.4 (b) Main Provincial Legislation Related to the Water Sector

<table>
<thead>
<tr>
<th>Enactment</th>
<th>Year</th>
<th>Responsible Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Canal and Drainage Act</td>
<td>1873</td>
<td>Punjab Irrigation Department</td>
</tr>
<tr>
<td>Sindh Irrigation Act</td>
<td>1879</td>
<td>Sindh Irrigation Department</td>
</tr>
<tr>
<td>Punjab Minor Canal Act</td>
<td>1905</td>
<td>Punjab Irrigation Department</td>
</tr>
<tr>
<td>KPK Amendment Act</td>
<td>1948</td>
<td>Khyber Pakhtunkhwa Irrigation Department</td>
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<tr>
<td>Baluchistan Canal and Drainage Act</td>
<td>1980</td>
<td>Baluchistan Irrigation Department</td>
</tr>
<tr>
<td>Soil Reclamation Act</td>
<td>1952</td>
<td>All Irrigation Departments and WAPDA</td>
</tr>
<tr>
<td>Baluchistan Ground Water Rights</td>
<td>1978</td>
<td>Department of Irrigation Baluchistan</td>
</tr>
<tr>
<td>Punjab Water Users’ Associations Ordinance</td>
<td>1981</td>
<td>Punjab Agriculture Department</td>
</tr>
<tr>
<td>KPK Water Users’ Associations Ordinance</td>
<td>1981</td>
<td>Khyber Pakhtunkhwa Agriculture Department</td>
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<td>1981</td>
<td>Baluchistan Agriculture Department</td>
</tr>
<tr>
<td>Sindh Water Users’ Associations Ordinance</td>
<td>1982</td>
<td>Sindh Agriculture Department</td>
</tr>
<tr>
<td>Rural Area Drinking Water Supply Act</td>
<td>1985</td>
<td>Khyber Pakhtunkhwa Irrigation Department</td>
</tr>
<tr>
<td>Salinity Control and Reclamation of Land Ordinance</td>
<td>1987</td>
<td>Khyber Pakhtunkhwa Irrigation Department</td>
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</tbody>
</table>

Several amendments were made in 1975. But these two did not bring much substantial changes in the law. Since then, no amendments have been made in the Canal & Drainage Act, 1873. The Canal & Drainage Act, 1873 was further amended in 2004 to incorporate the changes, keeping in view the following principles:

- Decentralization
- Transparency
- Efficiency
- Participation of the Farmers
- Needs of the Time
- Protection of Environment
- Proper management of canal water resources
- New canal projects
- Simplified Procedures
- Rationalization of Penalties
- Repeal of Redundant provision
- Proper Enforcement
- Removing in inconsistencies with the constitution

The important sections of Canal & Drainage Act, 1873 as amended to date concerning sanction of irrigation water, distribution of irrigation water, management
of irrigation water, and the canal offences under the Act for damage to the canal and its structures are described below:

### 3.8.2 Terminology Used

(a) **The Khal** is a watercourse, not maintained at the cost of the exchequer, which leads water from the outlet to the land of the person interested. It would normally be not more than 2 miles in length commencing from the outer and of the outlet to the last Nakka or cut in the watercourse where the Nikal or the process of emptying watercourse completes and the upper shareholder (irrigator) starts feeding through a fresh turn in the branch watercourse in rotation. (ii) The words “Main Watercourse” used in paragraph 8 (a) of Appendix E in the Revenue Manual means the tail Nakka of which is the farthest from the outlet. The mere fact that channel of watercourse runs in a straight line in continuation of the main watercourse cannot necessarily make that continuation also a part of main watercourse.

(b) **The Outlet** is maintained by the Canal Officers at the cost of exchequer and is a measuring device for water from the distributary, minor or sub-minor discharging into the watercourse.

(c) **The Nakka** is a cut in the watercourse from which water is carried directly into the fields. Normally it is fixed by the Canal Officers at Killa No.1 on the left and killa No.5 on the right while facing down the flow of water in the square, but it can be changed on request and re-fixed depending on the denudation of fields bed which either rises by silt deposit in due course of time or is depressed after leveling, etc.

(d) **The Nikal** is the water which empties into the last Nakka in the field from the main watercourse and the rotation changes in favor of the upper irrigator at the head or the next branch of the watercourse. In fact, this is the extra water supply for the last irrigator who has the advantage of water present in the watercourse to discharge into his field over and above his own turn. The period of turn of water fixed by the Canal authorities is the part Warabandi. This, however, cannot be claimed as of right and, is left at the discretion of the Canal Officer who, while sanctioning Nikal, should consider the area, time, nature of soil and the configuration of lands, etc.

(e) **The Turn** is the period of turn of water fixed by the SDO for every shareholder of watercourse proportionate to the area of the land.

(f) **Warabandi:** The arrangement of turns of taking water, when sanctioned by the SDO under Section 68 is known as Warabandi. It is binding on all the shareholders of the Chak being irrigated from the watercourse. Any contravention amounts to offence known as Warashikni and is liable to penal action under Section 33 read with Rule 32 and 33 of this Act.

(a) **Part Warabandi** is the schematic Schedule of turn of water which contains the following information:

- Name of Shareholders
- Number of the Squares (with the Shareholders)
- Area of land in “Kanals” or Acres.
- Period of turn of water in hours and is minutes
v) Clock time allotted, with extra time and deductions

vi) The last outlet or “nakka” from where the water is to be brought and the one where water is to be delivered to the next shareholders by the irrigator.

vii) Remarks and the person entitled to the “nikal” of water-
1) Turn or “Wari” is rounded up to minutes only.
2) Because leading water and compensation for nikal, etc.

The record of Warabandi is maintained in the office of the Divisional Canal Officer from where a copy can be obtained to prove a claim for change in turn. The copy is obtained on payment in accordance with the Schedule of Court-fees fixed in the relevant Act.

(g) “Chak” is the gross area of land holdings fixed for irrigation by an outlet. It includes un-commanded area also.

(h) Culturable Commanded Area (CCA) is the area under the command of an outlet excluding area which is not commanded.

(i) GhairMumkin is the area from within the extremities of Chak Boundary not likely to come under irrigation command (not commandable) because of the area covered by population, graveyard, high and dry land, green meadow reserved for future development near temporarily used for grazing animals, roads, pathways, school buildings, play-grounds, rural health centers, dispensary, etc.

(j) Gross Commanded Area (GCA) is the area command-able by the outlet from within a Gross Area. It includes an area which is likely to come under the command and for which water is available in the project, but is left un-irrigated because of its remaining unbroken.

(k) Gross Area is the entire area spread over the extremities of Chak of an outlet.

(l) Area cultivated is the area under crop or fruit trees or both and has been under crop in the previous three harvests.

(m) Area Assessed is the area irrigated on which water is levied. It is generally the same as the area matured.

(n) “Rajbaha” includes distributary, minor and sub-minor, which are maintained by and at the cost of Government under the direct charge and supervision of Canal Officer and which are used to supply water to a watercourse through the outlet.

(o) “Bhal” means the Silt, discharged through the outlet as of suspended material from the government channels, which gets deposited in the bed and on the banks of watercourse in due course of time.

(p) “Bhal Safai” is the process of removing Silt on self-help or cooperative basis by the shareholders from the bed of the watercourse. Although the Government under normal circumstance does not interfere, the Canal Officer is empowered under Section 34, Rule 33, to force the shareholders to clear the silt of the watercourse. Similarly, under Section 18 of this Act, Canal Officer can repair the watercourse not being properly maintained by the shareholders at their cost.
3.8.3 **Section 33 – Liability when water is illegally taken from Canal or Watercourse**

1. The Divisional Canal Officer will conduct inquiry about the unauthorized water allocation or use by the framer, after the offense being committed is pointed out to him with evidence by the farmer Organization, and the levy charges will be charged to the person who gets benefit or the land where water flows to it under this act:

2. Subject to sub-section (1), where the water used in an unauthorized manner has been taken from a watercourse, the Deputy Collector after holding an inquiry, may levy the charges:
   (a) From the person by whose act or neglect such use has taken place; or
   (b) If such a person cannot be identified, from the person on whose land the water has flowed and such land has derived benefit therefrom; and
   (c) If such a person cannot be identified or the land, on which water has flowed, has derived no benefit therefrom, from all persons chargeable in respect of the water supplied through such water course.

3.8.4 **Section 68 – Settlement of difference as to mutual rights and liabilities of persons interested in watercourse**

1. Settlement of difference has to be in terms of mutual rights and liabilities of the persons interested in the use of water from a canal outlet, such that whenever a difference arises between two or more persons with regards to the distribution of water from a canal outlet, construction, use, or maintenance or the watercourse supplied with water from the outlet, or deposit of soil from watercourse clearance, or mutual rights and liabilities in that respect, any such person may apply in writing to the Sub-Divisional Canal Officers, stating the matter under dispute. The Sub-Divisional Canal Officer, shall thereupon proceed in the matter as laid down hereafter. Provided that the Sub-Divisional Canal Officer, shall proceed without any application on the basis of the orders passed under Section 20-B, Section 20-C or an order canceling the extra water supplies.

2. The Provincial Government may entrust the functions of SDCO under this Section to an Organization of Farmers established under Section 4-A in such area wherever it deems necessary.

3. The Sub-Divisional Canal Officer or the Organization of Farmers shall give notice to all persons interested and liable to be affected, regarding the enquiry in the said matter and after such inquiry, shall pass orders thereon.

4. Any person aggrieved by an order made under sub-section (3) may, within fifteen days of the passing of such order, prefer an appeal to the Divisional Canal Officer.

5. Where an appeal has been preferred under sub-section (3), the Divisional Canal Officer:
   (a) Shall decide the appeal as expeditiously as possible; and
   (b) may, pending the disposal of the appeal, stay the operation of the order appealed against; provided the stay order does not adversely affect any standing crops.
6. The applicant shall not be entitled to use the watercourse that may be sanctioned under sub-sections (2) or (3) above for conveyance of water to his land or the land required for the deposit of soil from watercourse clearance, until:
   (a) He has paid to the landowner the compensation for the land occupied for any of the aforesaid purposes in whatever shape it is determined through agreement; or
   (b) Possession of the land has been acquired under the provision of this Act.

7. Any order passed under sub-section (2), if there be no appeal preferred against it and an order passed in appeal under sub-section (3) shall be final as to the use or distribution of water for any crop sown or growing at the time when such order is made, and shall thereafter remain in force until it is set aside by a decree of the Civil Court.

3.8.5 Section 68-A – Power to Restore interrupted supply

If the canal water supply of any land is interrupted by dismantling a watercourse or internal khal, the Sub-Divisional Canal Officer, upon application made in this respect and after such enquiry as is deemed necessary, may order interim restoration of the dismantled watercourse or the internal khal and the interrupted supply of water at the cost of person who interrupted the supply; and if necessary by use of such agency or force as may be called for. And such an order shall remain in force until the dispute is finally settled under Section 68 and if necessary a watercourse link is constructed under this Act.

Provided that where the Provincial Government has entrusted the functions of SDCO under Section 68-A to the Organizations of Farmers established under Section 4-A, the functions of SDCO under this Section shall be mutatis mutandis performed by the said Organization.

Any charge determined for restoration of the watercourse or internal kahl shall be recoverable from the person at faults as arrears of land revenue.

References


