

# **MINIMUM FLOW IN INDUS BELOW KOTRI BARRAGE**

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In my opinion the Government of Sindh had not presented the case, in enough details covering all kinds effect of lack of water flows to the sea year around. My observations and studies show that lack of flow of water below the Kotri Barrage started affecting environments from 1960s onwards, resulting into the following consequences:

- a) Drying up and dying of the riverine forests soon after 1970.
- b) Reduction of area under fruit and vegetable crops like; banana, melons, tuber vegetables and etc., in the riverine areas.
- c) Shifting of settlements from the riverine areas.
- d) Destruction of natural pastures in the riverine areas causing reduction in animal populations.
- e) Intrusion of sea water in the river bed to a distance of 60 miles up-streams from shore.
- f) Intrusion of saline water from the riverine areas into ground water of adjoining irrigated areas and turning shallow water lenses brackish.
- g) Desertification of settlements, specially those close to the river and migration of men and cattle to other areas of abandoning of animal husbandry.
- h) Desertification of Keti Bander, Ghorabari and other townships and population moving away to other areas.
- i) Destruction of mangroves due to increase in salinity of sea-water along the whole coast-line of Sindh.
- j) Increasing of salinity of water in the sea creeks and estuaries and raising salinity from about 25,000 ppm to over 35,000 ppm, thus making estuaries uninhabitable to certain sea-fauna, like giant fresh water shrimps, sea water shrimps, hilsa, crustaceans and other species.
- k) Abandonment of 16,000 acres of land near Gharho reserved for shrimp farming by the Government of Sindh. Sea shrimp can survive within

salinity range of 17,000 - 27,000 ppm of water, but within 5 years i.e., 1983-1988, salinity rose beyond the tolerable limit and none of the allottees could raise shrimps. One allottee M/s. Lipton spent millions of rupees to raise shrimps but finally abandoned the area due to high salinity. With low salinity waters shrimp farming could have been established all along 200 miles of sea coast.

- l) Sea-fish and prawn catch reduced considerably. Today the number of fishing boats and trawlers are 10 times more than what they were 20 years back and yet the total fish catch is the same as it was then. The fishermen have also spent longer time at the sea and go further away into the sea, and yet total catch has not increased substantially.
- m) During the inundation season the river water brought 0.6% silt with it. River waters pushed in to the sea some 30-50 miles and sea waves and tides brought this water along with silt back to the whole coast of Sindh 200 miles long. It diluted coastal water and reduced their salinity.
- n) Due to this silt the delta was also advancing at the rate of one mile a century, and it was also combating the effect of strong sea-waves. Today reverse is taking place and sea waves are striking against the soft shore and eroding it. It is certain that the rate of erosion in a century may exceed 10 times the advancement of the past and in 5 centuries from now coast line may reach the same limit at which it was 5,000 years ago, i.e., along the line running east to west of Gujo.
- o) The effects of lack of water discharge in the river on the environments in the Arabian sea have not been measured and it is reported that salinity is increasing there. The Pakistan's Exclusive Economic zone extends 200 miles into the sea. The sea environments along the Sindh coast have already suffered, though data have not been collected.
- p) The Arabian sea itself within the 500 miles of Sindh coast is an arid area, with very little rain-fall like that in Sindh. Its waters are going to be affected badly by no discharge from the Indus.
- q) The figures for loss of agriculture land due to salinity increase close to river embankments in Thatta and Badin districts need to be studied.
- r) The report of M/s. Mott MacDonald International, Engineering Associates and MMP (Pakistan) for Sindh irrigation and Power Department is based on limited 'Scope of work', to check extrusion of sea-water in the irrigated area. It is the fact that sea-water along the coast-line does not intrude land-wards as fine silt of the river Indus brought back by the sea-waves becomes sealant, but sea water which now comes up stream of the Indus for 60 miles, intrudes from the river bed in the adjoining areas and turns existing shallow fresh water lenses saline and drinking wells and

hand pumps brackish. It also turns the lands saline. This issue probably was not within the scope of work of the Consultants. Their suggestion that fisheries stocks have not declined does not take into consideration the increase in the number of fishing boats and increased time to meet the past years targets. Their contention that mangroves depend upon brackish water (mixed with river water) are being replaced by saline-water species, does not state that new species have the same economic value, and same uses as the species getting extinct. Their contention that the brackish mangroves cover 3,000 hectares (7,407 acres) is misleading. The fresh river water entering the sea and being mixed with saline water in a width of 50 miles area was being brought back by the sea waves to the shore and the mangroves along the whole coast of 200 miles were benefiting from lower salinity waters.

- s) Salinity level of regenerated water in the river-bed at Sehwan is 800 ppm and additional water is required to dilute it before its use for irrigation at Kotri Barrage and down below.
- t) Lack of water not only below the Kotri Barrage but also below Sukkur has effected forest and agricultural land.
- u) some 600,000 acres were under forest and equivalent area under agriculture crops in the river an areas of Sindh in 1960s. Water is needed for restoring forest and agriculture, from Guddu to sea.
- v) Fresh ground water in Kotri Barrage Command in shallow depths is connected with old courses of river Indus and absence of fresh water in the river bed below the Kotri and its replacement by sea water has turned water in the areas adjoining the river, saline in shallow depths.
- w) The Consultants have stated that the source of fresh water, is not known. Study of old courses of river Indus by me has confirmed that the fresh water lenses were connected with old beds, further confirming that ground water in the vicinity of the river bed can remain fresh or saline depending upon fresh and saline water in the river bed.
- x) Mr. Fazalullah has suggested an alternative to 10 maf fresh water to save mangroves, that drainage water from the Punjab (and perhaps NWFP from both on right and left banks) may be brought and dumped into the river below the Kotri Barrage. This essentially is the Punjab's plan to pass their saline drainage water through Sindh to sea to which Sindh has hitherto opposed. It amounts to killing two birds with one stone, i.e., solution to disposal of the Punjab's saline drainage waters through L.B.O.D and R.B.O.D and turning Sindh's lands saline and closing the chapter of supply of 10 maf of fresh water to Sindh. Sindh should not agree to this proposal. They are trying to show us that drainage surplus of the Punjab, will almost be fresh water. The facts are other-wise. About

5,000 cusecs of Kandhkot-Thul-Shahdad Kot surface Drainage Project will be fresh almost like river water and storm water drainage of the Kotri Barrage will also be fresh, but their flow will coincide with annual inundation and can be utilised else-where out side the irrigated plains.