E- FLOWS and Water Sector Devolpement

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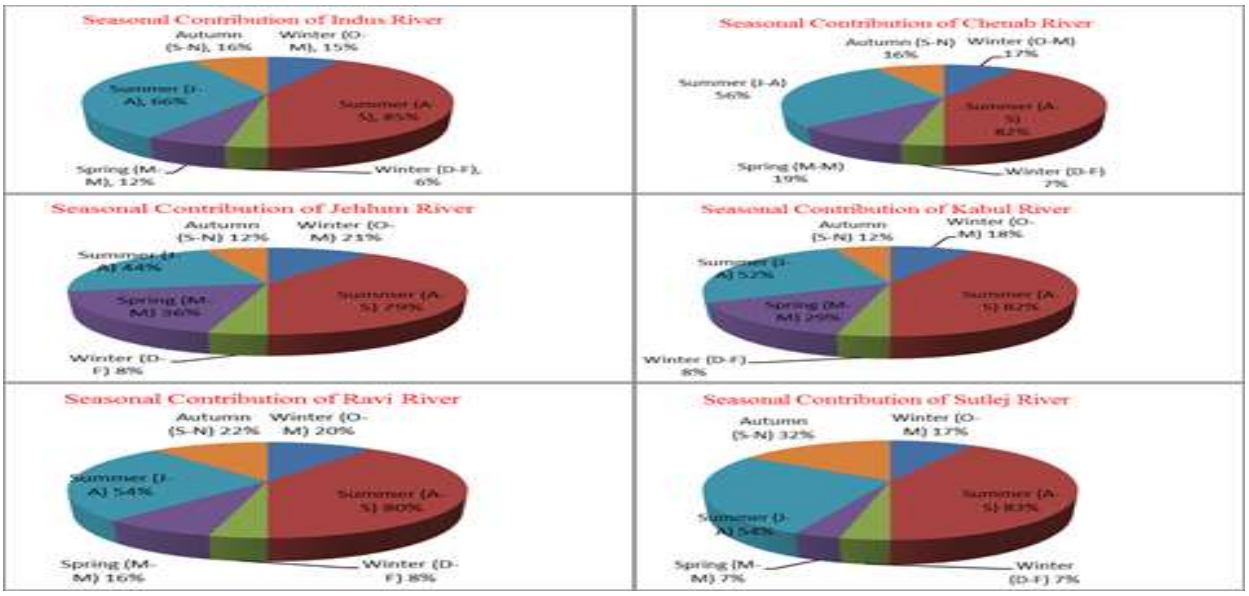
Pakistan Fisher Folk Forum (PFF) a fisherman community organisation started a "Keep River Free" campaign. They are trying to sensitized masses to agitate against big dams and water devolpement infrastructure. The campaign builds upon the woes of fisheries community in the Indus delta especially at the downstream. Downstream communities having some unpretentious apprehensions which need to addressed rightly on priority basis. One of them is related to the provision of environmental flows for the restoration of Indus delta. A study report of SDPI on "Ecological Assessment of Indus Delta at Keti Bunder, Pakistan: Environmental flows requirements and impacts of climate change-induced river flow changes" discloses that due to no E-Flow allocation for Indus River that reach downstream to Kotri Barrage, there is zero or close to zero flow during most of the year. On the contrary we often hear the argument from WAPDA and some other policy maker institutions that we lost annually 35 MAF water in the Arabian Sea. Such type of biased highly politicized and apolitical slants to handle the water resources devolpement debate is a foremost hindrance in consensus building process among the federating units. That's the reason; water is not still in priorities of our policy makers. Here is an opportunity that we rightly sensitized the masses at upper riparian of the basin about the importance of environmental flows as well as recognized the downstream riparian about the importance of water devolpement infrastructure in guaranteeing it. There are number of techniques available to assess the environmental flows developed by different organisation. We may define E-flow as "The flows pattern required for the maintenance of ecological integrity of rivers, their associated ecosystems and the goods & services provided by them." The minimum flow in the river should not be less than the average of ten days minimum flow of the river in its natural state (CWC, 1992), though it is a consensus among experts that environmental flow requirement fluctuate markedly in different rivers, reaches and have to be assessed and recommended separately. Water flows govern physical, chemical and biological health of rivers. Environmental flow improve water management by safeguarding a sustainable water supply to meet the needs of people, agriculture, energy, industry and the environment. Environmental flows are meritoriously providing a breakeven point between water resources development and

the need to protect freshwater dependent ecosystem. The ecological degradation of the Indus delta is an outcome of water devolpement projects on Indus River as well as the hasty Indus water treaty. Drastic reduction of flow in eastern river also contributes towards ecological regression. Incorporating E-flows in IWT for rivers where minimum E-flows are not released (Ravi, Beas and Sutlej) is also providing help in ecosystem services. Any future project plan on the shared river must carry out environmental flow vulnerability assessments at the downstream of the basin. In a proposed national water policy 2015 prepared by Pakistan Engineering Council (PEC) included the environmental integrity of basin in the policy document and ensured that "Environmental flows shall be made available to flow in the rivers to maintain a sound environment for the conservation of the river, delta and coastal ecosystem and for the fresh and brackish coastal fisheries".

But here the questions is, how the environmental flows made available when there will be an erratic and seasonal flow variation persist in the Indus river system. On an average 80- 85% flows are available during the summer season (April- September) from which around 50-66% flows available only during three months of summer (June, July and August). Only 15-20 % flow available during the rest of the year.



There is unpredictability of supply through time as a result both of seasonal variation and inter-annual variation. All too often the magnitude of variability, timing and time span of high and low supply are not precisely predictable; this equates to unreliability of water which poses great

challenges to water managers in particular and to societies as a whole. Supply-side infrastructure often used to artificially overcome natural variability and assure reliable supply and mitigate risks. This huge variability of seasonal flows demands an integrated water resource management (IWRM). Integrated water resources management (IWRM) defined by the Global Water Partnership (GWP) as "A process which promotes the coordinated development and management of water, land and other related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems". At policy level we have to provide constitutional guarantee to ensure the environmental flow throughout the year for downstream aquatic ecosystem services as well as fulfill the water needs of indigenous communities for sustainable livelihoods. There is still a lot of space available for water resources devolpement in Indus basin as compared to other river basins. According to world register dam reports Indus River have very low percentage storage (i.e. 9%) as compared to Colorado, Nile, Yellow and Columbia River basin.

Average annual flow and storage capacity of dams of some major river basins of World

Sr. No	River Basin	Catchment Area (1000 Sq. Km)	Length	Average Annual Flow (MAF)	No. of Dams	Storage Capacity (MAF)	% age Storage
1	Colorado	141	2,320	12	3	59.62	497
2	Nile	3,349	6,650	38	1	132.00	347
3	Sutlej Bias Basin	…..	1,440	32	5	11.32	35
4	India (Total)	.....	……	750	4,636	245	33
5	Yellow River	745,920	5,464	345	7	68.95	20
6	Columbia	668	1,950	179	3	34.00	19
7	Indus & other rivers	1,166	2,880	145	3	13.64	9
8	Yangtze	1,959	5,494	870	1	32.00	4
9	World	…..	…….	20,000	…..	8,000	40

Source: - Medium Term Development Framework for Water sector (Group Report), World Register of Dams 2003- ICOLD

Water is a key driver of economic and social devolpement. There is direct relationship between the investment in water resources devolpement and economic growth of the country. The economic devolpement of 1960s is a witness for such claims. There is a dire need of time that we build consensus among all stakeholders and put pressure on government institutions for adopting a socially equitable and environmentally sustainable national level water sector devolpement

vision. At policy level we have to admit that supply-side solutions alone are not sufficient to address the ever increasing demands from demographic, economic and climatic pressures. Demand management measures are also being introduced to counter the challenges of inadequate supply.