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WATER STRESS AND WATER WASTAGE SCENARIO OF PAKISTAN

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By:

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Abstract:

Water crises is one of the of major threats to the Nation these days, once-unthinkable. Now, as per World Bank's Document, Pakistan is currently ranked 23rd. among 167 countries facing Water Scarcity. There are many reasons to reach from water surplus country to a water-stressed country. The first main reason is the population growth rate; the second reason is climate change, as Pakistan is included in one of the top ten countries which are adversely hit by climate change; the third major reason is the lack of the willpower to develop new storage projects; the fourth one is transboundary water developments; the fifth main reason is the consumption behaviour of different sectors; the sixth reason is extremely low water conveyance efficiency; and another major reason is types of irrigation techniques being practiced throughout the country. The outcomes of the compilation and analysis of the facts on the discussed topic will be very useful for Water Planner's and Policy Makers to revise the policies to give a rational direction for the development and management of Water Resources with the pragmatic approach.

Water wastage has many reasons but top of all is the National Attitude towards the water usage and not having serious attention towards this crucial problem. In this study, scenario has been presented so that the concerned could think to take certain solid and meaningful measures for the problem.

Availability and Consumption Scenario

The water coming to our systems over the past decades has not changed much. But the demand has increased with an exponential trend. The presently available storage capacity cannot cope with the population boom while the fact is available resources are reducing day by day. The water reaching the end-user is facing serious conveyance losses.

As per UNDP's and PCRWR's reports, in Pakistan Water Scarcity signs started in 1990 and crossed the safe limit in 2005 and could be declared a Water Scarce country by 2025.As per World Bank's Document (2019), Pakistan's water availability reduced to 935 cubic meters per capita per year; in 1951, it was 5,260 cubic meters per capita per year; in 2016, it turned into 1,000 cubic meters per capita per year. This is likely to further drop to 860 cubic meters per capita per year by 2025.

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It has been realized by the professionals and different Think Tanks of the country that Water Shortage is one of the Top Most alarming threats to the country. As per the report at the moment 500 Cubic Meter per person is available. In addition to this the capability of Water Storage capacity is hardly for 36 days, in some reports it is only for 30 days. Consumption per capita ranges from 30 to 35 liters per day.

Keeping in view the reported statistics, the deficit in demand and supply is on an increasing trend. For example, in 2011 the difference was 4% and at the end of 2020 it could be 20% and with this trend in 2025, it could be 31%. As per the report's comments, it could be under control if the consumer changes their attitude towards consumption. It is estimated that the optimal consumption attitude could bring the loss rate down from 5.6% to 3.6%approximately. Because of the careless attitude towards the Water Consumption, almost all the cities of Pakistan are under stress, for example, if you take the case of Islamabad where inhabitants are comparatively educated but because of a carefree attitude regarding Water Consumption, shortage gone up to 106 Million Gallons. Now, the fact is written on the wall that because of the reduction in the supply from Surface and much less availability from Underground Sources, available water in total is much less than the demand and non-serious attitude of the Public is worsening the scenario.

As per forecasting reports prediction is that by 2040 Pakistan may be one of the most water Stressed countries in the Region. It is not first time, many times through the outcomes of different studies red alert was passed on to the Concerned Authorities regarding the coming crises; but because of the lack of keen interest of planners and concerned authorities, problem is on door step ringing the loud bell to alert.

Groundwater extraction rates are also concerning. Pakistan currently extracts approximately 61 cubic kilometers of water from its aquifers each year, which far exceeds sustainable limits. As a result, Pakistan is commonly considered to be both Water-Stressed and water-scarce.

Requirements

- **Agriculture Crop Requirements**

The Pakistan Economic Survey, 2017-2018 notes that white rice was sown over 2.724 million hectares last year, it rose to 2.899 million hectares this year. As per the survey contributed to more land being used to grow rice. This 6.4 percent increase ultimately yielded 7.442 million tonnes more production. Last year, 6.849 million tonnes of rice were produced in Pakistan.

More water is utilized in growing these water-intensive crops. For instance, sugar cane requires 1500-2500mm of rainfall (or water from other sources) to complete the growth cycle. In other words, to produce a kilo of sugarcane, between 1,500 and 3,000 liters of water are utilized. Similarly, at 0.45 kilograms per cubic meter, Pakistan's rice productivity is 55 percent lower than the average water productivity of one kilogram per cubic meter of rice in Asian countries.

As many people's livelihood linked with the more growing rice and more sugarcane, these crops will remain popular. The water consumption with reference to agriculture will be on rising trend.

National Water Policy (NWP) fact has been accepted that the irrigated agriculture is the backbone of the economy and consumes around 95 percent of water resources. In addition to it around one million tube wells in-country pump 55 MAF of groundwater for irrigation, which is around 20 % more than what is available from canals – highlighting how much water-intensive use in the agriculture sector is, this practice is not sustainable for long.

- **Domestic, Industrial & Commercial needs**

As on population has no proper control and it is increasing day by day and in return new housing schemes are booming, accordingly they need water supply for human and other purposes. For country's economic growth and Industrial Development water supply is a vital part but Industrial Management National Policy is not seriously addressing the water availability issue.

On one side there is water-intensive situation but on the other side, there is water wastage in the rural sector, the supply of potable water to the cities is a challenge. NWP has also urged the promotion of greater urban water management and revision of urban water tariffs. This dimension of the policy encourages enhancing recovery and reducing system losses, treatment of industrial effluents and provision of sustainable supply of water for everyone.

The Pakistan Water Partnership (PWP) report points out that the policy fails to explain the most questions that from where the resources will come. The China-Pakistan Economic Corridor (CPEC) is one option; the Chinese are already operating a plant to provide potable water to their engineers working in water-scarce Gwader. But will such measures have broader utility?

'Though CPEC, investments are going to increase,' the question about how CPEC is going to integrate with water demands immediate attention is a question mark therefore, we should critically analyse the supply and demand side

- **Problems**

Water governess is a concept largely missing from Pakistan's national development and legislative narratives. Despite the investment (of more than USD 300 billion) pumped into infrastructure development that dealt predominantly with increasing supply of water, on the other side, the country is still in water stress condition, keeping in view the demand scenario, the weaknesses and inefficiencies of the water management systems in agriculture and in other sectors remained ignored continuously. Inconsistent policies and a lack of focus on critical problems such as climate, water and ecology is pushing Pakistan in troubles. Water issues require interventions at individual and state levels, focusing on both demand and supply.

Powerful Agricultural Land Lords Tax on Agriculture could not be legislated in the rational way. A fraction of operational cost on Irrigation System received through revenue. On the other the hand major consumption of Surface Water is in Agriculture Sector. As a matter of fact, recovering hardly only a quarter of annual operating and maintenance costs.

Now security conflicts are trigging due to the water scarcity, even in Agric. Conflicts between different groups/tribes are only due to water scarcity problem.

As per UNDP report, Water associated problems are amongst the key challenges faced by Pakistan. Pakistan's water profile has changed drastically from water abundant country to one experiencing water stress. Pakistan extracts 74.3 percent of its freshwater annually thereby exerting tremendous pressure upon renewable water resources.

Water Wastage and losses Scenario

Our water management practices are terribly inefficient. Strangely we are not bothering while using freshwater for irrigating crops in addition to it the types of crops we grow, having high hunger for water, like the rice and sugarcane more, and these crops remain popular in farmers. Without any education or awareness about how not to waste water or how to utilize efficient irrigation methods, the wastage will continue.

In this country, lavish use of water at Domestic and Commercial level is creating a serious threat. One of the major reasons is the low prices for usable water supplies. It is beyond doubt that change of habits could create a bit breathing space for the National Water Managers to manage the resources in an optimal way. Secondly country as per experts' observations, Pakistan is wasting Water resources due to inefficient consumption patterns and negligible recycling.

Apart from storage issues, experts' opinion is that water wastage is also a big issue in the country and one of the major causes of water shortage.

There is great wastage in Urban & rural sectors like;

- Washing cars with running Tap Water
- Washing premises with running Tap water
- Excessive use for shavers
- Flushing the toilets with old designed commodes etc.
- Even in mosques use of excess water use for ablution
- Municipalities using drinking water for parks, construction industry waste lot of water

Conclusions & Suggestions

Water has been highly politicized in Pakistan and there is an extreme deficit of trust among the provinces. This deficit of trust is largely due to a lack of excess to data and information. Popular papers need to be prepared along with posters and stickers for creating mass awareness at all levels, including civil society at large, which is also integral. Without awareness, water cannot be made as 'business for everyone'.

Current irrigation practices are inefficient and water productivity is the lowest in the Indus basin irrigated agriculture. The development of laser land levelling technology and furrow-bed irrigation has resulted in saving 30 percent of water and has led to an increase in productivity by 25 percent in the district of Okara, Punjab. Such a model

should be replicated in other areas as well. Likewise, the establishment of drip irrigation farming systems- a type of value of high-value farming as a mix of creeper-type vegetables and high-density orchards-in areas outside the Indus basin where water is at a premium, should be adopted by farmers.

Awareness programs, ineffective management to transfer farmers' knowledge for agricultural practices and unnecessary wastage of water are major issues. Effective and optimum utilization of water increased awareness programs and proper record-keeping regarding water applications and utilization are required to curb water issues in Pakistan.

Modern engineering looks at water management in a very comprehensive way. Not only does it focus on technology but it places equal emphasis on socio-economic and environmental aspects, making it a balanced mechanism of an integrated process. In this way, harmony can be achieved in designing water systems for development that simultaneously cater the sustainability of water resources, its flow regimes, and its ecosystems. Such integrated water resources management (IWRM) approach ensures food and energy security, all at the same time. In our case, in doing so, national security is also strengthened because of the nature of our economy. Without a proper strategy for 'Integrated watershed management' water losses are raising.

Recommendations

i) At an individual level, households and industries need to use water more efficiently and judiciously. In the agriculture sector, whereby flood irrigation and plantation of water-intensive crops should be controlled and regulated.

ii) In this regard, public education campaigns that focus on enhancing water usage awareness will be helpful.

iii) At a broader level, an integrated water management system is needed that promises efficient water distribution for all sub-sectors. This needs to be formally entrenched through an effective institutional and legal system. Holistic national water policy is required.

iv) Water pricing to promote efficient use of water, building water storage infrastructure to store excess water, enforcing strict water quality management systems to curb water pollution, controlling population growth and adopting a sustainable pattern of urbanization, are needed to address this water crisis, otherwise future development will be hampered.

v) Abiana rates have no link with the amount of water being consumed. Currently, provincial governments charge a flat rate as abiana on the basis of the cropped area. As a result, once the cropped area has been determined, the incremental cost of applying extra waterfalls is zero. Similarly, the tariffs are unreflective of the water crops. For example, rice and cotton on average are charged at Rs. 85 per acre; even though rice consumes 60 percent more water than cotton.

vi) The big 'losses' are drainage returns to the rivers and seepage to groundwater, both of which are then used through diversion downstream or through groundwater pumping. Indeed, it is canal seepage and percolation to groundwater that supports the high and increasing levels of groundwater use in

the basin. The problems in irrigation are more to do with inefficient and unfair distribution of the water, and low productivity in terms of yield and value crops a unit of water used.

vii) The flows to the sea are commonly seen as wastage. The average flow to the sea has been falling for more than 80 years. Firstly, the eastern rivers were diverted to India and then storages were constructed in Pakistan. The average annual flow to the sea has been reduced by than 80 percent. There is strong evidence that declining flows (as well as pollution, reduction in sediment loads and fragmentation of the river by multiple barrages) are contributing to the declining health of the lower river and delta and undermining the valuable services these ecosystems provide including fisheries and coastal protection. The economic value of these ecosystem services has not been properly assessed.

viii) In canals, water losses due to the unequal leveling of watercourses result in an almost 60 percent loss of water. New engineering tactics and techniques should be applied to decrease seepage losses and proper law and order procedures must be used to control these problems.

ix) As National Water Policy has been formulated, the Government must work aggressively to implement it in letter and spirit if serious to address the water crises that the entire nation is grappling with.

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