

# Strategic Analysis Paper

9 April 2015

## Water Security in an Urbanising Pakistan

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### Key Points

- Pakistan faces an acute water crisis which requires immediate action.
- Urbanisation will exacerbate water insecurity and present Pakistan with significant economic, social and political challenges.
- Water insecurity and climate change are contributing to the rapid increase in rural-urban migration.
- To ensure greater social and political stability and equity in urban centres, access to safe, potable water is critical.
- Without international assistance, Pakistan will struggle to adapt and overcome the challenges that it faces.

### Summary

Pakistan ranks tenth in the 2014 Global Index of Fragile States. Beyond political and social instability, the availability of and access to fresh water has emerged as a major security challenge. The country must contend with declining water availability, growing pollution and climate change-induced rainfall and river flow variability. It also suffers from systemic corruption, ineffective governance and an illegal water trade that undermines water management. The country does not presently have the governance capacity to manage urban growth and this will exacerbate Pakistan's water insecurity. Severe water shortages, surface and ground water pollution caused by industrial and domestic effluent and underdeveloped infrastructure in sprawling metropolitan areas are just some of the urban challenges that Pakistan must address. Water is at the heart of Pakistan's development needs. With the assistance of the international community, Pakistan must move beyond strategising and begin implementing its [Vision 2025](#) if it is to mitigate the national water crisis.

## Analysis

The availability of fresh, potable water has emerged as a key security challenge in Pakistan. Less than 1,000 cubic metres of fresh water is now available for every person annually. While a great deal of focus has been on Pakistan's interstate water challenges, particularly with India, internal water management issues present a far greater threat to national security and political and social stability.

### ***Water Management in Pakistan***

Pakistan is an arid to semi-arid country that does not have enough water to meet current or future demand. Inconsistent rainfall patterns have led to a dependence on the Indus River and subterranean aquifers. As a consequence, the river is now grossly over-allocated and a series of canals and diversions to service the agricultural sector has left the river basin vulnerable to low flows and drought further downstream. Groundwater depletion and reduced flows in the river both present significant threats to Pakistan's water security.

Climate change will exacerbate that insecurity. Increased variability in climate is predicted to intensify monsoonal rains and a rising incidence of flooding and drought is expected as a result. Glacial melt in the Himalayas will also have a significant impact on river flows in the Indus River Basin, causing flash flooding and a long-term reduction in water availability. Adapting to these changes and mitigating the impacts of climate change, particularly in agricultural regions, will be critical to securing long-term food and water security.

Limited storage capacity creates further vulnerability; particularly as climate variability increases and water availability fluctuates from season to season. The Asian Development Bank [estimates](#) that Pakistan's water storage capacity is no more than a 30-day supply. This is significantly less than the recommended supply of 1,000 days. Addressing storage capacity limitations should be prioritised to ensure a stable supply of water year round, particularly as rainfall becomes more sporadic and snowmelt reduces.

Perhaps the greatest threat to Pakistan's water security is failed governance. Volatile domestic politics, embedded in systemic corruption, has created an environment ripe for the mismanagement of the country's natural resources. Already dealing with an [energy crisis](#), Pakistan must now address a growing scarcity of water within a system that is not conducive to implementing public policy or transparent management systems.

In Karachi, attempts to discipline those who illegally siphon water from the central water system will likely prove futile while systems of governance remain unchanged. Companies and bulk consumers often bribe local authorities for permission to connect to the supply line, making it difficult to both prevent the connections and identify those who should be held to account.

The illegal water trade in urban areas is driven by a [shortage](#) of water for all consumers. Industries are unable to access the water they need to operate, while many domestic consumers are serviced by water trucks that may only deliver once or twice a week. The need for more water has led to a booming illegal water trade that both undermines and capitalises on dysfunctional public water systems. Ageing and unmaintained infrastructure is

contributing to a considerable loss of water in cities. Public utilities do not have the capital to maintain or extend these systems to cater to growing demand. Consumers, meanwhile, are forced to pay exorbitant prices to access clean water. This is a significant missed opportunity for Pakistan. The illegal siphoning of and trade in water has created a system of water economics which, if controlled by official utilities, could both manage water demand and provide the capital required to service and maintain infrastructure.

### ***Population, Poverty and Urban Growth***

Incidences of protests, inter-community conflict and social unrest linked to water scarcity are increasing across Pakistan. As noted above, the acute water scarcity in Karachi is creating tension within the community and has led to a booming illegal water trade. The city has experienced a population growth rate of 80 per cent between 2000 and 2010, according to [The Wilson Centre](#), and must now manage a population exceeding 22 million people. The city faces a water shortage of almost 1.9 gigalitres per day, while more than [one-third](#) of the city's water is lost through poor infrastructure and water theft.

Pakistan's urban population is predicted to grow at approximately three per cent per annum, rising to over half the country's population by 2025. This growth will bring with it a number of challenges for which Pakistan, under a business-as-usual scenario, will not be prepared. Basic services and systems are already grossly underdeveloped in the major cities and urban growth will exacerbate those shortfalls. WaterAid estimates that more than 15.3 million people currently do not have access to safe water and that over 93 million people, more than half of Pakistan's population, lack access to adequate sanitation.

The trend of horizontal expansion places further pressure on provincial governments to ensure that service provisions are adequate for these populations. As one government [report](#) describes, Pakistan accommodates 6,000 people in one square kilometre of urban space. Dubai, in comparison, has vertically expanded and accommodates 200,000 people in the same area. The growth of "*katchi abadis*" (slums) in Pakistan's cities increases the water insecurity of their inhabitants. Many of these slums lack basic potable water access and sewerage facilities. These communities are often dependent on private water vendors who charge exorbitant amounts for clean water.

Polluted ground and surface water leave residents with little choice but to pay the high cost for clean water or risk disease from unimproved water sources. Waterborne infections account for 70 per cent of all common diseases contracted by Pakistanis. Ill-health related to waterborne diseases has a direct impact upon Pakistan's labour force and, therefore, its economic potential.

Poverty, overpopulation, severe water shortages, a lack of access to basic amenities, growing pollution and an increasingly youthful population with limited work opportunities, is a future that Pakistan will have to face if urgent action is not taken to address these challenges.

### **Urbanisation, Agriculture and Water Security**

Ninety-five per cent of Pakistan's available water is allocated to rural areas for agriculture. The sector contributes approximately 24 per cent to the country's GDP and close to fifty per cent of the population is dependent on agriculture for their livelihoods. Agriculture and rural populations are linked to the country's water security and urbanising cities in two ways. Rising water scarcity is, in part, responsible for the current rural-urban migration trend. Rapid surface and groundwater loss, increased water pollution and an increasingly variable climate are pushing rural populations to migrate to urban areas in search of work and greater opportunities.

Growing urbanisation, conversely, is reducing the rural workforce and, in the long term, potentially reducing the country's agricultural productivity. According to a report from the IUCN and Government of Pakistan, 70 per cent of the country's foreign exchange is earned through agriculture. Pakistan must manage the growth in its urban centres while addressing ongoing food security challenges with a reduced rural workforce. Failure to do so will lead to significant economic losses and a rise in the number of food-insecure people – all in a country already troubled by high levels of malnutrition and [food insecurity](#).

Water availability is one of the key constraints to agricultural production. Approximately 80 per cent of Pakistan's cultivated land is irrigated, according to a [report](#) by the United States Institute of Peace (USIP). Water wastage in the industry is rife. Water loss through damaged and leaking canal systems requires urgent attention and the upgrading of irrigation practices to increase water-use efficiency should be prioritised.

### **Water and Traditional Security – An Intrinsic Link**

The link between water availability and political and social tension in Pakistan will grow within the current political environment. In Pakistan's cities, where provincial governments will struggle to manage the growing urban sprawl, increasingly young, unemployed and impoverished populations create an ideal demographic for disaffected groups to expand their influence.

The USIP also [noted](#) that militant groups are increasingly engaged in relief and recovery operations. Gaining approval and support from local communities through humanitarian relief and aid is an effective method of recruitment and the localisation of support for militant activities. As Sadia Malik also [discusses](#) in *Economic and Political Weekly*, many of the vulnerabilities associated with human security, including a lack of access to clean drinking water and sanitation, create an absence of social security that is conducive to the radicalisation of poorly educated and unemployed Pakistani youth.

### **Looking Forward: Pakistan's Water Security Outlook to 2025**

By 2050, Pakistan will be the sixth-most populous country in the world and that population will be overwhelmingly urban if current trends continue. The Wilson Centre [estimates](#) that the availability of water per person will have decreased by 60 per cent during this period. Pakistan's greatest challenge in addressing its water insecurity is governance. Physical scarcity, while a threat, can be better managed if the required governance structures are in

place. Improving those structures and addressing water scarcity will also support greater domestic stability and security. The following opportunities and actions to improve water security in Pakistan have been identified:

- Address storage capacity limitations to ensure a stable supply of water year round, particularly as rainfall becomes more sporadic and snowmelt reduces. This will also reduce the impact of [flooding](#).
- Reduce water wastage through the adoption and upgrade of technologies and the promotion of conservation practices. Water metering and usage charges will support this.
- Review the economic value of water – the price of water should create efficiency in water usage and stimulate capital for infrastructure and services upgrades. Water should be billed by usage, rather than through a [flat fee](#), and water metering introduced. Linked to this is the need to tackle the illegal siphoning and trade of water.
- Expand and invest in the treatment of wastewater. The capacity of wastewater treatment must be increased by building more plants and better sewerage infrastructure. Greater regulation of industrial waste and making waste treatment mandatory instead of voluntary will meet part of this requirement. Improving sanitation and, thus, reducing the risk of ill health associated with poor sanitation and hygiene requires the development of wastewater and sewerage treatment infrastructure.
- Urban development should be modelled for vertical expansion. The construction of suitable high-rise districts to slow horizontal growth and replace urban sprawl can improve the ability of growing populations to access basic amenities and services.
- Increase water use efficiency in agriculture. Water wastage in the industry is rife and the loss of water through damaged and seeping canal systems requires urgent attention. The upgrading and up-skilling of irrigation practices to increase water-use efficiency should also be prioritised.

Predicted population growth and urbanisation trends will exacerbate insecurity in Pakistan if the status quo is maintained. Addressing the country's water challenges will require inter-sectoral co-operation and the adoption of flexible, location-specific management plans linked to the integrated management of the Indus River Basin. A one-size-fits-all approach will not lead to success. Systemic corruption and the absence of good governance structures will remain Pakistan's greatest barriers to development. It is imperative that these challenges are given the highest national priority and accorded the support required from the international community. Long-term national and regional stability depends on Pakistan's ability to mitigate a water crisis and provide for its booming urban population.

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