WaterAid

Universal access by 2030: will there be enough water?

'Running out' of water is not the main problem

The water scarcity at the heart of today's global water crisis is often rooted in power, poverty, inequality and poor management (known as socio-economic water scarcity), rather than because demand for water exceeds supply (known as physical water scarcity).[1] In the vast majority of cases the sector has been unable to extend access to water even where supplies are plentiful, which indicates the enormity of these socio-economic challenges.

Although physical scarcity is not the main issue, it is increasingly having an impact. Pressure must be maintained on governments to fulfil their obligations to deliver WASH to all their citizens through increased access, but the sector must also recognise the growing threat that physical water scarcity poses to the goal of universal access to WASH by 2030. Governments and service providers must be prepared for the compounding effect that emerging physical water scarcity will have on existing socio-economic challenges.

Physical water scarcity, such as that experienced during drought, will compound existing socio-economic challenges associated with extending access to WASH.

Water resources are increasingly over-exploited

Accurately measuring water resources is difficult – particularly as the physical availability of water varies enormously both geographically and throughout the year. According to recent scarcity assessments, at least 2.7 billion people live in basins where water scarcity is severe for at least one month each year.[2] Water scarcity correlates strongly with increasing demand (e.g. as a result of increased food production), documented ecological declines and socio-economic disruption in some of the world's most heavily used river basins.

India's official Ground Water Resources Assessment[3] classifies more than one sixth of the country's groundwater as over-exploited. The Indus River basin, home to at least 300 million people, experiences severe water scarcity for eight months each year.[2] In the north-western Indian states of Punjab, Rajasthan and Haryana, each of which lies fully or partly in the Indus River basin, groundwater is steadily being depleted.[4]

On the North China plain, aquifers are dropping by up to 3m per year in some areas.[5] From 1995–98 the Yellow River did not reach the sea for about 120 days each year, devastating ecosystems in the lower reaches.[6] The World Bank foresees water scarcity in China as having 'catastrophic consequences for future generations' unless water use and supply can be balanced.[7] Physical water scarcity is not restricted to fast-developing economies, with key river systems such as the Murray-Darling[8] in Australia and the Rio Grande in the USA and Mexico[9] frequently showing signs of extreme scarcity-related environmental stress.

Water resources are under increasing pressure from growth in population and consumption.

Many trends are converging to exacerbate scarcity: growth in both population and per person consumption; rapid and unplanned urbanisation; industrial development; changing food preferences; more intensive agriculture and a changing climate.[9] This growing competition for water indicates that those working in WASH must increase preparedness for the effects physical scarcity will have on access to sustainable WASH services and community resilience.

Physical water scarcity does not mean the future will be rife with water wars

The language generally associated with the notion that the world will run out of water – including terms such as 'conflict' and 'war' – is overblown. Mainstream media, politicians and the public seem to favour the melodrama of potential large-scale water conflicts, rather than the realities of the everyday brutality and localised violence endured by the 748 million people living without assured access to water. Inequity in water distribution suggests that, rather than international conflict, increasing physical water scarcity will cause continued and increased suffering of the poorest, least powerful and most vulnerable people, at the local level. Rather than postulating about future conflict between nations, we need to focus on establishing or supporting the right institutional arrangements, whether formal or informal, that can lead to enhanced community cohesion and cooperation over shared water resources.[10]

We should be concerned about what increased physical water scarcity, exacerbated by chaotic water resources management, will mean for WASH

Safeguarding poor and marginalised people's access to safe WASH in water-scarce areas requires careful consideration of the wider framework of water resource management. As river basins approach 'closure' (when water consumption approaches or exceeds the amount of renewable water available), users become increasingly interconnected. The withdrawal of more water in one area of the basin means reduced availability elsewhere.[11] This connectivity can affect the quality and quantity of water available for WASH. In an upstream area, water might seem plentiful because the downstream users are 'invisible'. Similarly, a farmer with a deep tubewell trying to make a profit from irrigated farming might be unaware of the poor people nearby who depend on shallow wells for their domestic water needs. The higher the demand on water resources, the more the actions of other water users and the competence of the authorities who manage and regulate water will affect the quantity and quality of water available for WASH.

Most governments do not manage water resources well, and physical water scarcity makes this harder

Physical water scarcity simultaneously makes water resources management more important and more difficult. Managing competing demands for water, achieving equitable services delivery, resolving conflict and maintaining water security during droughts are challenging tasks even in the most organised and well-funded societies. In closed river basins, when water is no longer sufficient for both social and environmental needs,[12] development of infrastructure often outstrips water resources before the necessary institutions are in place for water to be managed competently. Governments are frequently lured by politically attractive projects based on incomplete hydrological knowledge or impact assessments – e.g. by building large irrigation schemes that will increase water consumption to the detriment of other users.[11]

Integrated water resource management (IWRM) aims to address these issues, but implementation has been extremely challenging (as detailed in WaterAid's *Water security framework*[13]). Consensus via multi-stakeholder processes is difficult because few win-win arrangements are available and most solutions have substantial negative trade-offs.[14] One example of a negative trade-off is that emerging scarcity often means that policy makers introduce water-saving policies in urban areas such as leak reduction programmes, rainwater harvesting and provision of incentives to reduce demand. These might be prudent local responses to water scarcity, but, in a closed or closing river basin, such policies will inevitably reduce downstream river and groundwater flows. Downstream towns, farmers and ecosystems will be negatively (and potentially significantly) affected by the change.

There can be enough water in 2030 for the drinking, cooking, bathing, sanitation and hygiene needs of every individual; however, access for all is far from guaranteed. Much will depend on how water resources are managed (in terms of quality and quantity), how water is allocated and whose demands are prioritised.

How can the WASH sector respond?

In addition to the sector's core objective of extending access to WASH, several actions can feed into a policy change agenda that is robust enough to meet future challenges posed by constrained water supplies:

1   Assert that access to water and sanitation is a human right and therefore non-negotiable.

Under the *International Covenant on Economic, Social and Cultural Rights*, states are obliged to move as quickly and effectively as possible towards the full realisation of the human rights to water and sanitation. [15] Water and sanitation must be affordable, including adequate subsidies for poor people if required;[15] and must be sustainable in terms of both the permanence of services and ecosystem health. To satisfy this sustainability requirement, water scarcity must be managed to ensure that water and sanitation services are maintained under all possible water availability scenarios.[15]

2   Advocate more accountable, transparent and sustainable water resources management, which prioritises the right to water for WASH and is based on water accounting and enforceable allocation systems.

Poor and marginalised people's access to safe WASH depends on enforcement of priority access to water, which is rapidly undermined by weak and ineffective water resources management. Without the presence of effective water resource management institutions, the WASH sector's work might be undermined, or even reversed, by the physical water scarcity in closed and closing river basins.

The further development of water resources – such as new storage, irrigation schemes and hydropower dams – has a clear part to play in eradicating poverty. However, if water resources development is unplanned, unconstrained or not based on an accurate understanding of water availability, development can undermine the existing resource base of poor people, and miss opportunities to strengthen livelihoods and social equity. Parallel commitment in the institutional architecture of water resources management is necessary to ensure that water resources can be managed in ways that address social, environmental and livelihood risks, and protect the interests of those with much at stake but little influence in decision-making.

As physical scarcity forces a shift from increasing supply (relatively easy) to managing demand (more difficult), water management must adapt. Future management requires political reform and a commitment to evidence-based allocation, adequately-financed operation and maintenance of infrastructure, strong enforcing regulations, transparent and participatory data collection, and accountable and inclusive governance. An overwhelming majority of governments will need both technical and financial support to achieve this goal.

3   Demonstrate effective water resources management through work at the community level.

Although sound in theory, and despite intense global efforts and huge investment, IWRM has a poor track record of implementation, especially in low-income or fragile states. IWRM has been accused of being overly formulaic and prescriptive, too focused on water at the expense of other resources, ineffective at addressing complex problems and ignorant of the real water challenges faced by poor and marginalised people.[14]

WaterAid's experience at the local level shows that people can accommodate many water security challenges through localised, nuanced socio-political dynamics, which are often at odds with the top-down IWRM approach.[10] The securing water resources approach (SWRA) can be a more realistic option for local water users to play an active part in managing resources, alongside local institutions. The approach can also feed valuable data from the field into higher-level policy processes. The SWRA is described in detail in WaterAid's *Water security framework*.[13]

The securing water resources approach in Burkina Faso.

4   Increase the impact of SWRA by influencing authorities to uphold citizens' rights to water.

To guarantee long-term success, local-level water resource management requires strong links with, and support from, higher levels of government – e.g. sub-district, district, state and national levels.[16] Most national water management policies do not incorporate successful operational processes at the local level, and the bridges between evidence, policy and practice are weak.[13] Using community-based activities as an entry point, stakeholders working primarily on WASH can increase their engagement with national water policy to ensure local-level bodies – such as NGOs, farmer groups, and community organisations – are recognised, data and monitoring systems are used, and users are engaged in the water management decisions that affect them. The ultimate objective of local-level management must be to drive change in national policy so that it aligns with field realities.

5 Better understand how water scarcity shapes politics and deepens the need for engagement with the political economy of WASH.

Access to water is, of course, far from equal, even before physical water scarcity is taken into account.[17] This fact is evident in all instances of socio-economic water scarcity where power structures, low investment or poor management prevent people from accessing what might otherwise be a plentiful and renewable resource. These same drivers will become increasingly important when available resources can no longer expand, as in closed river basins or polluted aquifers. In fact, the emergence of scarcity is in itself a political driver – it creates new winners and, in greater numbers, new losers, regardless of the policy environment. The people most likely to lose out are those who are already vulnerable (such as women and poor people), which underscores the need to identify the underlying causes of vulnerability, such as social exclusion, ill-defined rights to water, weak regulations and low enforcement capacity. In doing so, managers can pre-emptively identify and address expected effects before the water resource becomes heavily contested and allocation is fraught with difficulty. This emphasises the need to design advocacy strategies that are based on solid power and stakeholder analysis and therefore take into account political realities.

6 Build strategic partnerships: understand how other users and uses will respond to water scarcity, and establish what this means for WASH.

How water scarcity and competition will affect WASH locally will vary, but they are always likely to add to the hardship of poor people. More equal sharing of scarce supplies can be achieved through increased engagement between different water-using sectors. Large corporations, for example, already recognise that water scarcity is a potential commercial risk, and will use their influence to protect their interests. In such scenarios, complementarity and focus on shared interests might be a powerful weapon – corporations benefit from healthy and productive workforces and consumers, predictable regulatory and investment environments and well-managed reliable water supplies. In view of the increasing relevance of the interconnectedness between users in closed and closing river basins, and the projected investment in watershed management by companies, the WASH sector should seek to engage with and influence these activities as a way to build a concerted and high-level focus on water security benefits for poor and vulnerable people.

7 Focus on urban water management and pollution.

Rapid expansion of urban areas is creating demands for water and sanitation services around cities, most of which are not included in planned infrastructure improvements, leaving millions vulnerable to water scarcity. Over the next 20 years, nearly all of the world's net population growth is expected to occur in urban areas, with the global urban population increasing by 1.4 million each week.[18] Unprecedented numbers of unplanned arrivals, combined with too little strategic

planning, insufficient investment and low political prioritisation, has caused millions to live in slums (a consequence known as 'slumisation'), where vital infrastructure – such as effective distribution methods, systems for faecal sludge management and regulatory mechanisms – is woefully inadequate.

Urban settlements are also the main contributor to point-source pollution. More than 80% of sewage in developing countries is discharged untreated, polluting rivers, lakes and coastal areas.[19] All types of pollution contribute to water scarcity by rendering existing supplies unfit for certain uses. Water supply for basic human needs must be of very high quality, so is particularly vulnerable. Tackling the issues associated with rapid urbanisation will require more than an improvement in the component parts of existing systems. New and innovative management will be needed that uses a diverse portfolio of water sources, is flexible and adaptive to change and involves affected stakeholders in decision-making processes.

Next steps

The current and future challenges presented by increasing water scarcity can be daunting, but are not insurmountable. As water scarcity grows; so does the need for increased focus in the way water is allocated, regulated and managed, with greater engagement in how water policy is made and implemented. The sector will remain focused on core WASH objectives; however, we can also contribute to wider water management efforts in terms of both practice and policy by:

1   Continuing to implement local water resource management approaches, with a focus on gathering evidence of successes and challenges, sharing learning from implementation experience and advocating the policy changes necessary for replication.
2   Focusing on establishing lasting connections between communities and the levels of government responsible to them (e.g. establishing new lines of communication, building trust by sharing hydrological data, etc.) and supporting communities in efforts to hold their governments to account.
3   Influencing government investment decisions so they prioritise the hard and soft infrastructure required to extend access to WASH, and the water monitoring and accounting that is an essential prerequisite for contemporary water management.
4   Supporting governments in piloting simple and rapid water accounting methods that make better use of information that can be downloaded from global databases (such as rainfall, climate and land-use) and is supplemented with local inputs drawn from participatory processes that also help to build credibility and data acceptance.
5   Using all available information to help authorities identify the populations likely to be affected by scarcity and develop strategies to address the causes of vulnerability and increase resilience.

6 Prioritising the needs of poor people by developing policy solutions based on field experience and new research, and increasing engagement with community leaders, public servants, politicians and donors and in national water policy debates.

7 Exploring new forms of cross-sector collaboration (civil society, government and the private sector) to work towards fair and equitable access to a limited and crucial shared resource.

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