Bangladesh WASH Sector Brief

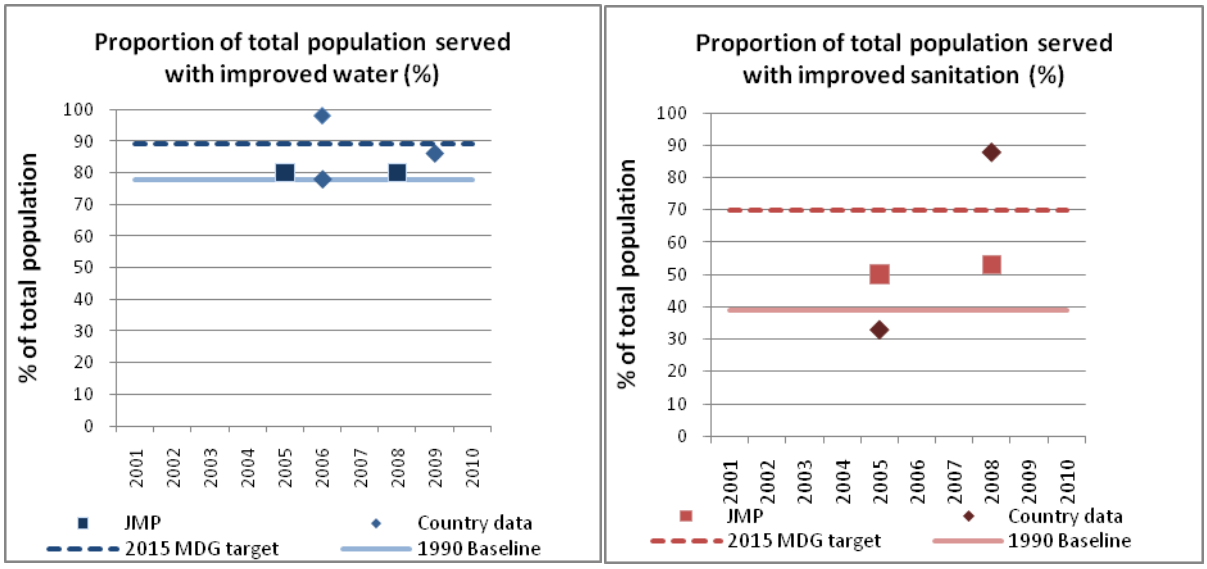
Headline issues

- Bangladesh faces many challenges that hinder progress in WASH, most urgently from high vulnerability to climate change effects, arsenic contamination of groundwater supplies and high levels of poverty. Several highly vulnerable locations including the coastal belt and haor areas critically need support.
- Urban sanitation is a particular area of need. Demand for services is driven by rapid urbanisation, while urban poverty in fast growing slums and constricted space restrict options for interventions.
- Sludge management is emerging as a significant issue in both urban and rural areas. The lack of sludge management presents a serious public health hazard and is leading to widespread environmental contamination.
- The government is committed to reaching universal access to basic sanitation, and donor agencies have an opportunity to support these efforts. Whilst open defecation has been reduced, there are questions around the quality of latrines and a large proportion are not hygienic.

Coverage and WASH related health statistics

The Millennium Development Goal (MDG) targets and coverage figures for access to improved water and sanitation in Bangladesh are difficult to interpret due to inconsistent application of definitions and national goals. Based on the goal to halve the percentage of people without access in 1990, the 2015 MDG targets are for 89% and 70% of the population to have access to water and sanitation respectively. The government's national targets are for 100% of the population to have access to safe water by 2011 and to sanitation by 2013.[1] The government uses the national targets to report against the MDG targets.[2] While the government reported dramatic improvements in water access to 98% of the population in 2006, the identification of arsenic contamination led to the estimated coverage being lowered to 78%[2] (Figure 1).

Figure 1: Access to improved water and sanitation



Source: WHO/UNICEF Joint Monitoring Program (JMP) (2010) data for 2008.[3] Country data from Government of Bangladesh (2009)[4]

For access to sanitation, coverage data is challenging to interpret due to multiple definitions, and there is debate about the appropriateness of certain definitions. The two main definitions include the WHO/UNICEF Joint Monitoring Program (JMP) definition and the *'Basic Sanitation (Bangladesh Standard)'* which is the standard for the 100% coverage national target. The latter includes 'shared latrines' and 'unimproved pit-with-slab latrines' which are excluded in the JMP definition.[1] At SACOSAN 2011 exclusion of 'shared latrines' from the JMP definition was debated, since in Bangladesh in both urban slum and rural 'haor' areas, housing density is extremely high and shared latrines are appropriate and will likely remain so into the future.[5] The SACOSAN declaration raises this issue and the need for JMP to reconsider the status of shared latrines.[5] Coverage figures are not always clear about which definition has been used. It appears likely that neither the government target for 'basic sanitation' nor the MDG target for water or sanitation will be met (see Figure 1), as the sector faces significant challenges[1] discussed further below.

Both urban and rural water is predominantly supplied by tubewells with handpumps,[6] with the majority installed by private contractors and paid for by households without government involvement.[7,8] Groundwater has been considered a good option even for urban areas due to pollution of potential surface water resources, although the lowering of water tables remains a concern.[6] The discovery of widespread arsenic contamination of shallow aquifers has proved an enormous setback to the near-universal access to water that was reported in the early 1990s.[9] Many tubewells have also become unsafe due to bacterial contamination.[6] Several alternative water supply options have been identified in the National Policy for Arsenic Mitigation 2004, amongst which deep tubewells became the most popular choice despite possibility of arsenic migration from shallow aquifers, and the longer term impacts of over-withdrawal.[9] Planning for arsenic mitigation appears to have declined since 2004 according to a recent review, and an estimated 20 million people in 2009 still remained exposed to levels of arsenic exceeding drinking water standards.[9]

In addition to the arsenic issue, the country has experienced a number of setbacks from its high vulnerability to natural disasters such as cyclones, floods and storm surges, which have had a devastating impact on WASH infrastructure, effectively undoing progress that is made.[1] Salinity intrusion is a serious issue in coastal regions for water quality and degradation of agricultural land.[8] Further to natural setbacks, progress in WASH has been hampered by human factors that have left great disparities in access to services among and within districts, and between rural, urban and slum areas - factors described in the recent country paper for SACOSAN included lack of initiative, poor communications, lack of awareness, and poverty.[1]

According to SACOSAN country papers for Bangladesh, the government is strongly committed to meeting its 100% access to 'basic sanitation' goal by 2013, and with support from donors and NGOs, has made a significant achievement in reducing open defecation from 42% in 2003 to 6% in 2009 through effective adoption of community led total sanitation.[1,10] The recently released figures from Bangladesh Bureau of statistics Household Income-Expenditure Survey (which use a different set of definitions) indicate that open defecation has dropped from 11.3% (in 2005) to 4.4% (in 2010), however that non-sanitary latrines (which indicates that the latrine discharges into open space or is not sanitary) increased from 37.0% (in 2005) to 44.5% (in 2010).[11] 89.5% of rural household participants in a recent Water and Sanitation Program (WSP) study owned or shared a latrine that safely confines faeces.[12] The study also found the national focus on sanitation by the government has helped to shift social norms around open defecation, and sustain latrine use. The 100% 'basic sanitation' coverage target appears possible for rural sanitation, but may elude urban sanitation which requires much higher levels of investment which are not currently being made.[6] The economic impact if inadequate sanitation in Bangladesh has been estimated to cost US$4.2 billion annually - 6.3% of gross domestic product (GDP) in 2007.[13]

Sludge management is another area in urgent need of attention,[1] in both urban and rural areas.[5] In urban areas, conventional sewerage systems are absent in all urban areas except a limited area of Dhaka serving around 20% of the city's population, while other areas use septic tanks, pit latrines, unhygienic latrines or none at all.[10] In cities, many buildings are not connected to any kind of sanitation system, instead discharging effluent directly into waterways contaminating surface and groundwater and creating a public health hazard[6,10] and there is concern that where emptying does take place of latrines, that sludge is being dumped into nearby waterways or canals since sludge management processes and facilities are absent.[5] In rural areas, emptying of latrine pits is becoming an increasing requirement as pits gradually fill up, however the cost of emptying in some cases is higher than the initial investment cost in a latrine as there are few operators providing this service.[5] A number of NGOs are piloting ecosan projects with households and schools, to enable efficient and safe excreta management and productive reuse.[14]

Urban areas come with further challenges – the city of Dhaka highlighting the worst of these: the fastest growing mega-city in the world characterised by large slums, poor housing, excessively high land prices, water shortages, poor sanitation and drainage, unplanned construction and poor urban governance.[15] Cities are unable to keep up with demand for water and sanitation services due to high rates of urban migration – estimates of access to water have remained at 85% since the 1990s.[6] Urban space constraints particularly impact slums where population densities are 200 times greater than the Bangladesh average,[8] and space to construct individual household latrines is impossible.[1] Latrines are reportedly shared by over 80% of slum populations, while the national figure for shared latrines is 25%.[1] However while they may be counted as having access to shared latrines, most slum dwellers are reported as using drains, open fields, roadsides or riverbanks for defecation.[10]

There are also concerns about water and sanitation services bypassing some segments of the population, described as living in "underserved areas specially the hill tracts, char, haor, coastal areas, islands, tea gardens, slums, Barind tract, disaster-prone and poverty-stricken areas",[1] although accurate disaggregation or analyses of excluded populations are not available.[16] There is a very high level of poverty in the country, with the government reporting almost 31.5% of the population in 2008 living on less than $US1/day,[11] while twice as many live on less than $US2/day.[17]

Diarrheal diseases are a leading cause of diseases among children under five, second to common colds and influenza.[18] High occurrences of acute respiratory illnesses are also associated with poor sanitation.[19] Children are most vulnerable to adverse health impacts from arsenic contaminated water.[9] Table 1 provides a summary of water related health indicators including WASH related deaths at more than 100,000 per year.

Table 1: Summary health statistics

Infant mortality (deaths per 1000 births) [20]	52
WASH-related DALYs (% of all DALYs)[21]	10%
Total WASH related DALYs (Years)[21]	4,066,450
Total WASH related deaths per year[22]	104,400
WASH related proportion of deaths (%)[22]	9%

Sources: World Bank and WHO as shown in endnotes

Finance trends

The government has demonstrated its commitments to improving WASH by more than doubling its allocations for water and sanitation from its Annual Development Program budget, from an average 2.5% during 2000-2007 to 5.8% in 2010-2011.[1] The SACOSAN 2011 country report notes however that the

Ministry of Local Government and Rural Development and Cooperatives' estimate for the public sector's WASH investment requirement is $US3,000M over FY 2011-2015, but the budget availability is only $US1,600M.[1] There are inequities in the relative levels of investment visible in the Sector Development Plan (SDP) resulting in significant focus in urban areas and a smaller proportion in rural areas despite the population weightings being reverse to this.[5] Whilst there are arguments for higher investment in urban areas due to costs, there are also several highly vulnerable rural areas (such as coastal, haor and hill track areas) that require significant investment.[5]

Historically, external donor agencies have provided 40-50% of the government's overall investment budget, with a smaller percentage provided for the water and sanitation sector.[6] Combined donor and government allocations for the sector were approximately $US120M, 210M, 180M and 200M for 2008, 2009, 2010 and 2011 respectively.[23] The ADB has provided consistent support with the largest program,[6] while other significant donors have been Denmark, Japan, Netherlands, UK, UNICEF and WaterAid.[23]

While other estimates vary depending on the assumptions used, all estimations indicate that investment in WASH needs to increase significantly. An assessment by the Planning Commission's General Economic Division suggests that a total $US14 billion will be required for water supply and sanitation over the period 2009-2015 to achieve the MDGs.[8] An analysis by *Sanitation and Water for All* notes that the General Economic Division's estimates are not based on costs for infrastructure in Asia, and if costs typical in Asia are used, the requirement (sourced from government and donor budgets as well as household contributions) would be $US5 billion.[24] Although this is still significantly higher than current levels of spending, they note that failing to invest could be more costly in the longer term not only because of productivity losses from poor sanitation, but from missing very significant economic and social returns on such investment.[24]

Despite the high need for funds, the SACOSAN country paper notes Ministry of Finance reporting for 2009-10 that around 12-15% of funds allocated through the Annual Development Program remained unutilised,[1] but offers no explanation. In contrast, a recent study by the HDRC found that 98% of the funds allocated to sanitation has been spent and more funding is needed, however it raises questions about the effectiveness of the allocation on subsidies in improving lasting access to sanitation.[25] So, although there is a need for further donor funds, their allocation and utilisation processes need further examination.

On the issue of adequacy of funding for water and sanitation, survey respondents to the UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS)[26] indicated that there is greater uncertainty for the urban sector, with less than 50% of funding needs available for urban sanitation and no information for urban water. Funding for rural water (over 75% of needs) was better than for rural sanitation (50-75% of needs).

Sector governance

The Ministry of Local Government and Rural Development and Cooperatives (MoLGRD&C) has statutory responsibility for water supply and sanitation at the national level. Functional responsibility lies with its Department of Public Health Engineering (DPHE) for all areas except major cities and some large secondary towns, for which the Local Government Engineering Department (LGED) is responsible.[10] The sector is funded by the Ministry of Finance, the Planning Commission, and external agencies.[28,10] The Ministry of Health has a key role, however the level of coordination between all these different ministries needs to be improved.

There are several national policies and strategies in place for the WASH sector, including the National Strategy for Accelerated Poverty Reduction 2005 – more commonly known as the Five Year Plan, which has

improving water supply and sanitation as one of seven priorities.[10,6] The Sector Development Plan (SDP) is the key strategic planning document that consolidates multiple policies and goals into a 10-year framework, developed in 2006 by the DPHE with support from the Danish agency DANIDA.[6] The SDP was recently updated to cover FY2011-2025 and gives greater emphasis to hygiene promotion as the backbone to all water and sanitation interventions, as well as services for hard to reach areas of the community.[27] The National Policy for Water Supply and Sanitation 1998; the National Sanitation Strategy 2005; and the National Policy for Arsenic Mitigation & Implementation Plan 2004 are other key documents that guide the sector.[27]

Whilst reports by the government present the institutional developments very positively,[1,10] others observe that the policies and strategies are poorly implemented and institutional arrangements are inefficient and poorly coordinated.[16,28] Respondents from Bangladesh to the GLAAS review in 2010 describe a relatively optimistic picture of the status of policy and governance in the WASH sector while pointing human resource capacity as the major constraint. Elsewhere in the GLAAS report human resources are noted as addressed in national strategies and reviews, with sufficient and increasing in-country opportunities for education and training institutions for sector professionals, suggesting other human capacity barriers such as budgetary constraints or too few qualified professionals applying to work in the sector.[26] An ADB evaluation confirms one factor: retiring professionals are not being replaced rapidly enough with others of similar calibre leading agencies such as the DPHE to decline in technical capacity.[6]

Subsector governance

The demarcation between urban and rural classification is unclear and is assumed to coincide around the district and sub-district level of administration (Zila and Upazila) which consist of small towns and villages.

Urban water

The main actors in urban water are Water Supply and Sewerage Authorities (WASAs) and City Corporations (CCs) in the six largest cities, Pourashavas (Municipalities) for secondary and smaller cities, and Zila Parishads (District Councils) and Upazila (sub-district local governments) for small towns.[10] The Local Government Engineering Department (LGED) designs and implements larger infrastructure projects that are handed to WASAs and CCs for management and operation, while the Department of Public Health Engineering (DPHE) provides similar support to Pourashavas and Zila Parishads.[10]

According to WaterAid's review of the sector, CCs and Pourashavas have little capacity to deliver services, largely due to lacking adequate human resources, while systems for setting tariffs, collecting fees, maintaining service quality, delivering services to the poor and regulatory compliance are also very weak.[16] NGOs have played a key role in creating links between community based organisations (CBOs) and WASAs to enable services to be delivered to the urban poor.[16,29] In Dhaka, Dhaka WASA has recently institutionalised a Low-Income Communities section to support mechanisms for service delivery for the urban poor, which is in the process of developing its roles and responsibilities.[29]

Key NGO-led projects play an important role in urban WASH arrangements, particularly for the poor. DSK is a local NGO that has developed a water supply model in urban slums in collaboration with WaterAid to provide water legally to slum communities since 1992, with permission from City Corporation and DWASA to construct water point and connect these with the WASA mains.[30]

Urban sanitation

Of the six largest cities, only Dhaka has a limited sewerage network for which the Dhaka WASA is responsible. Other WASAs are responsible only of water supply, while City Corporations are officially responsible for onsite sanitation.[10] However in Dhaka for instance, neither Dhaka City Corporation nor DWASA see onsite sanitation as their responsibility.[29] Local governments elsewhere are responsible for both urban water and sanitation as above.[10]

Rural water

The DPHE has oversight for rural water and sanitation[10] however others in the sector see it as suffering from extreme shortage of human resources.[16],[29] Implementation of rural WASH occurs at the level of Union Parishads (UPs) – the lowest tier of local government involving groups of villages – who have responsibility for hygiene education and environmental sanitation, as well as the distribution of tubewells and latrines through Union Water Supply and Sanitation Committees.[10]

The creation of Water Supply and Sanitation Committees at different administrative levels (Ward, UP, Upazila and Zila) is part of national policy for enabling community participation.[10] NGOs also set up CBOs with representation of the poor and marginalised that are often allied with the latter committees.[5] WaterAid, for example, has been involved in setting up around 15,000 CBOs but note that these CBOs are not actually institutionalized,[16] which raises questions about sustainability. It should be noted at the same time, that rural households make very significant financial contributions to water and sanitation investment.

A number of large rural WASH projects have been implemented using different models of government-donor collaboration. The World Bank programs are collaborations with DPHE, while UK Department for International Development (DFID) uses agencies such as WaterAid and UNICEF for implementation outside government.[6] Another, the Hygiene, Sanitation and Water Services Fund (HYSAWA), is set up as a registered government-owned company facilitated by DANIDA, which provides funds to nearly 700 UPs to WASH programs in specific geographic areas.[10,6] MoLGRD&C, with support from World Bank's Water & Sanitation Program (WSP) and other development partners, has initiated a peer-to-peer Horizontal Learning Program (HLP) that enables UPs to share and replicate successful practices.[1] With growing number of UPs participating, the initiative is credited with contributing to the spreading reduction of open defecation and achievement of "100% sanitation coverage" in many UPs.[10]

Rural sanitation

Institutional arrangements for sanitation are as for rural water as noted above. The government is strongly committed to improving rural sanitation, and through Basic Block Grants, had government block allocations to Union Parishads for their annual development programs with 20% earmarked for sanitation purposes, including subsidising latrine construction for the extremely poor, and for motivational programs.[1,6] While this condition on funds is seen to have contributed to significant improvements in rural sanitation access,[1] NGOs working in the sector observe that they currently have inadequate capacity to fulfil their mandate to manage sanitation in their communities, particularly in the haor areas.[16,29] In addition, it now appears that since 2006, Union Parishads have received 'Extended Block Grants' (instead of Basic Block Grants) and that these grants have removed the provision of mandatory spending of 20% as a sanitation subsidy and Union Parishads are mandated instead to be guided by local needs and priorities to spend the grant.[31]

Health and hygiene

Hygiene promotion has not received very much attention in Bangladesh,[16] a shortcoming acknowledged by government and being addressed through the formation of a national working group to develop a national strategy for hygiene promotion.[1] The Ministry of Health and Family Welfare is responsible for imparting hygiene messages in rural areas through their health workers however there is no institutional linkage between health workers and DPHE demonstrating fragmentation in the sector.[16]

UNICEF has been a significant player in imparting health and hygiene education to rural and urban communities under the program Sanitation Hygiene Education and Water Supply in Bangladesh (SHEWA-B) which receives primary funding from DFID.[28,32] In addition, UNICEF is active in schools sanitation programs,[32] an area identified by the government for greater policy support from 2011.[1]

Knowledge of hygiene is relatively high in the population,[16] possibly the result of wide CLTS programs and the annual observance of 'sanitation month' in October since 2003.[1,6] However, UNICEF observe significant discrepancies between reported and observed hygiene behavior, highlighting greater need for suitable local innovation to change hygiene behavior.[33]

A key gap in the hygiene area concerns poor urban populations. Whilst rural areas are covered by health workers mentioned above, there is no such equivalent resource for the urban poor, most of whom would be unlikely to receive hygiene promotion messages since there is also no national level campaign.[5] Given the rising numbers in urban areas, this is an issue requiring attention.

Climate change and water resources

Bangladesh is highly exposed to risk from natural disasters, ranked number one in the Climate Risk Index Ranking as the country most affected by extreme weather events globally in recent decades,[34] with similar verdicts on climate vulnerability made by other assessment schemes (Table 2). The major hazards the country has experienced include cyclones, floods, drought, riverbank erosion, landslides, tornado, earthquakes and arsenic toxicity in drinking water.[34] With three large rivers converging in Bangladesh (Ganges, Brahmaputra, Meghna), melting glaciers due to climate change will greatly increase the probability of flooding for up to 9 months a year.[35] Bangladesh has 54 cross-boundary rivers shared with India and 3 with Myanmar, and is vulnerable to their catchment management practices.[36] Land degradation and deforestation in the elevated areas of India and Nepal contribute to flooding and increased sediment loads in the rainy season, while upstream extraction in the dry season exacerbates drought impacts.[36] Salinity intrusion on aquifers in coastal areas that is currently experienced,[37] largely due to groundwater over-extraction, will worsen as a result of sea level rise and is predicted to lead to loss of 10-15% of the land from inundation.[35] More intense tropical cyclones and storm surges are other climate change driven risks for the country that could affect around 35 million people overall.[35] An effective early warning system for cyclones has been established, and the government appears to be well advanced in preparing policies and plans for creating disaster risk awareness[34,35] however their effective implementation will likely need support.

Table 2: Summary status of water resources and vulnerability

Renewable water (ML/population)[38]	8
Overall Climate Vulnerability factor 2010[39] (on scale of *acute, severe, high, moderate, low*)	Severe
Overall Climate Vulnerability Factor 2030[39] (on scale of *acute, severe, high, moderate, low*)	Acute
Environmental Vulnerability Status[40] (on scale of *Extremely vulnerable, Highly vulnerable, Vulnerable, At risk, Resilient)*	Highly vulnerable

Donor environment

Bangladesh has one of the strongest local presences of donors in the world.[28] The largest donors co-financing WASH with the government are the ADB, with World Bank, Japan International Cooperation Agency (JICA), Danish agency DANIDA, AusAID and UNICEF and the Netherlands amongst the most significant.[6]

The Urban Partnerships for Poverty Reduction Project (UPPR),[41] the largest poverty reduction program in the country, has a significant urban WASH component as part of its goal to improve the livelihoods and living conditions of three million urban poor and extreme poor people, especially women and girls. The US$120M project implemented through UNDP over 2008-2015 is co-funded by DFID and beneficiary communities.

Many NGOs are active in the sector. WaterAid is another significant actor[6] as are Plan International.[29] Water and Sanitation for the Urban Poor (WSUP) are contributing to work in urban slums and related institutional strengthening.[29] DSK is a local NGO that works in the sector largely through strengthening community based organisations (CBOs).[30] BRAC is an international NGO that began operations in Bangladesh in 1972, whose work in WASH falls within its overall goal to alleviate poverty by empowering the poor.[42] There are around 2000 NGOs registered in Bangladesh of whom less than one hundred work directly in WASH,[16] however the government recognises them as critical in mobilising civil society participation in government or donor led WASH projects and programs.[1] An NGO Forum for water and sanitation has been formed to act as the apex networking and service delivery body of NGOs, CBOs and private sector operators in the WASH sector of Bangladesh.[43]

The government's report to the SACOSAN conference[1] refers to successful leadership by the MoLGRD&C in working in partnership with government agencies, donors and NGOs to ensure WASH interventions are consistent with national strategies and targets. The ADB evaluation, however, points to different approaches by different donors and NGOs as creating dual systems that are problematic – such as provision of subsidies versus requiring communities to fund their own infrastructure.[6] Since stakeholders are guided by different sets of values, differences in approach may be inevitable. ADB suggests a sector investment plan could improve coordination and harmonisation further.[6]

Sector monitoring

The SACOSAN 2011 country report notes sector monitoring and accountability is a gap, as there is no process in place for monitoring and reporting WASH progress or outcomes.[1] A National Sanitation Secretariat was established in 2003 to monitor sanitation progress,[10] but has little capacity to carry out the task directly so data collection is delegated to successive local government administration levels.[1] Data collection for JMP and other agencies use different definitions of sanitation access without clearly specifying them, leading to conflicting figures in the sector.[1] Steps are being taken by MoLGRD&C to develop a National Management Information System, and to conduct a sanitation census in 2011.[1]

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[39] Source: Climate Vulnerability Monitor (2010) http://daraint.org/climate-vulnerability-monitor/climate-vulnerability-monitor-2010 . Countries are classified according to: ACUTE+, ACUTE, ACUTE-, SEVERE+, SEVERE, SEVERE-, HIGH+, HIGH, HIGH-, MODERATE, LOW. For information on included datasets and methodology for aggregation and categorising, see http://daraint.org/wp-content/uploads/2010/12/CVM_Methodology.pdf.
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