

# GETTING THE BASICS RIGHT: Water and Sanitation in South East Asia and the Pacific



## Introduction

Australia's overseas development aid assistance is set to increase substantially over the next four years. This much-welcomed increase could be stretched in multiple directions to satisfy multiple needs. This paper is a contribution to the debate on how best to direct Australia's investments to meet our objective of reducing poverty and achieving sustainable development. The paper suggests that a focus on domestic water and sanitation is critical and will contribute significantly to poverty reduction in the region.

An alarming number of people lack water and sanitation in our region. In South-East Asia and the Pacific<sup>1</sup> in the year 2004, 100 million people were estimated to be living without safe water and 185 million without adequate sanitation. That is about five times Australia's whole population without water and nine times our population without sanitation.

Widespread and indisputable evidence exists of the causal links between lack of safe water and sanitation and increased water-related disease, women's burden through carrying water long distances, undermining of education through lost school days, and high infant mortality to name a few. Not surprisingly, the cost-benefit assessments of investment in water and sanitation are generally very positive – one recent study showed an average 8 fold economic net benefit.<sup>2</sup>

Improvements in sanitation lag well behind water, in our region and elsewhere. Hidden in the shadow of water, sanitation receives much less attention or funding, and progress is hampered by the effects of cultural taboo and lack of community level awareness of the connection of faecal contamination to health and disease. But recent efforts demonstrate that effective interventions are now available, both for sanitation and for water, leaving us no excuse for continued inaction.

In the interest of alleviating human suffering and reducing poverty, the question that begs to be asked is why isn't more effort being directed towards water, and especially sanitation, initiatives? The Australian government launched its Water Policy in 2003, "Making Every Drop Count". Four years on, application of the policy across countries in our region has been somewhat inconsistent and our level of investment is less than 1/5 of our fair share of the likely aid required to reach the water and sanitation Millennium Development Goals (MDGs). In particular, sanitation was largely missing from the policy at the outset and still is. There is clearly a need to do more.

This paper examines the silent humanitarian crisis occurring in our region, draws out how Australia and others can better address the challenges it presents, and provides guidance and ideas for how we might shape a stronger more appropriate role for Australia's contribution. It is written to encourage greater action and commitment to this area by the Australian public and the Australian Government.

Note: All dollar figures quoted in this paper are in Australian dollars.

## Why do water and sanitation matter?

### The water and sanitation crisis

More than a billion people in the world lack clean water.<sup>3</sup> More than two and a half billion people lack access to improved sanitation.<sup>4</sup> Diseases or infections associated with inadequate water supply and sanitation affect almost half the people in the developing world and unclean water is the world's second biggest killer of children.<sup>5</sup>

Consider these figures:

Proportion of diarrhoeal disease attributed to unsafe drinking water, inadequate sanitation and poor hygiene	88%
Number of cases of diarrhoea each year	4 billion
Number of deaths caused by diarrhoea each year	1.8 million
Proportion of those deaths which are children under 5 years of age	90%
Annual economic costs associated with diarrhoea	\$50 billion <sup>6</sup>

The water and sanitation crisis across the developing world has serious ramifications for poverty alleviation. Water and sanitation are basic services essential for human health, economic growth and poverty reduction.<sup>7</sup> They are central to life and livelihood.

At a time when water is at the top of the agenda in Australia, it is timely to think not only of our own cities and regions but to also remember the needs of our neighbours. While we are worrying about having enough water to hose the garden, flush the toilet and take daily showers, more than 100 million people in South East Asia and the Pacific lack access to safe water and 185 million people are without access to safe sanitation. In the 22 developing countries in Australia's neighbourhood each year, approximately 80,000 deaths of children under 5 are caused by diarrhoea, which is directly linked to lack of such basic facilities.<sup>8</sup> In other words, every 7 minutes a child in our region dies through lack of water and sanitation.



Drilling a well for water, India.  
Photo: WaterAid UK

## International concern is rising

The inadequate progress in water and sanitation provision both in our region and elsewhere is evoking surprise and concern at the international level, leading to an on-going string of declarations as a means of strengthening international efforts to increase access to water and sanitation for all. The international commitment to the MDGs for water in 2000, and sanitation in 2002, identifies targets to reduce by half the proportion of people without access to safe water and sanitation by 2015. Access to water means at least 20 litres of acceptable quality water per person per day.<sup>9</sup> This is much less water than most Australians use every day to flush the toilet. Improved sanitation means having access to a sewer connection, septic tank, pour-flush toilet, simple pit latrine or ventilated improved pit-latrine for safe treatment of urine, faeces and menstrual waste.<sup>10</sup>

Commitment to the MDG targets has been followed up in 2003 with 'Water, A G8 Water Action Plan',<sup>11</sup> and more recently, the UN declared 2005-2015 to be the International Decade for Action, Water for Life, and 2008 to be the Year of Sanitation.

International aid for water and sanitation is also increasing and reached \$7 billion in commitments in 2005. Approximately \$800 million of this was invested in the 22 developing countries in our region. Of this \$800 million, 84% was donated by just four donors: the World Bank (44%), the Asian Development Bank (17%), Japan (17%) and the European Commission (6%).<sup>12</sup>

## A powerful way to invest in people

Since 2004, water and sanitation's share of development assistance has started to increase<sup>13</sup> reaching 6% in 2005. The World Bank has more than tripled its investment to \$2.3 billion, the Asian Development Bank committed to double its water sector expenditure,<sup>14</sup> and the UK pledged to double its funding for water and sanitation in Africa<sup>15</sup> to \$245 million. Despite these efforts, global aid for water and sanitation is still well below the best estimates of the total needed which are around \$23 billion per year to achieve the MDGs.<sup>16</sup>

Furthermore, the economic benefits of investing in improved water and sanitation far outweigh the costs. In South East Asia and the Pacific, it is estimated that the total cost of intervention to achieve the MDG targets is around \$6.4 billion annually, of which around \$2.1 billion would need to be aid.<sup>17</sup> In contrast, The World Health Organisation estimates that the benefits would include 42 million less cases of diarrhoea, 18 million school days and 167 million work days resulting in direct health savings of \$936 million and total economic benefits of more than \$15 billion to the region.<sup>18</sup>

Access to safe water and sanitation are the keys to unlocking economic growth and productivity, and provide significant leverage for existing investments in health and education. Recognising the significance of water and sanitation for poverty alleviation, the Copenhagen Consensus has ranked water and sanitation as second (after communicable diseases) in a priority list of forty development challenges. The list was developed by a panel of economists, including four Nobel laureates, in response to the question: "In a world of limited resources, if we cannot do everything at once, what should we do first?"<sup>19</sup>



Billimau community collecting sand for their water supply construction; Bobonaro district, Timor-Leste.  
Photo: Claire Rowland, IDSS.

**"There are great benefits from the provision of water and sanitation; there are low cost options, which might suit specific contexts; and the international community must act decisively and quickly to help achieve MDGs in water and sanitation."** Asian Development Bank Water MDGs Strategic Thinking Discussion Paper.

## Critical to achieving other development goals

Water and sanitation are essential for development. While all MDGs deal with important issues, the water and sanitation targets, along with education, are perhaps the most critical links. The United Nations 2006 Human Development Report links water and sanitation to all other MDGs and states that clean water and sanitation are "the most powerful preventive medicines available to governments to reduce infectious disease".<sup>20</sup>

# WATER AND SANITATION

Table 1 **Benefits for other MDGs of achieving the water and sanitation targets<sup>21</sup>**

Millennium Development Goal	Significance of water and sanitation for this goal
<b>Goal 1</b> Eradicate extreme poverty and hunger	Lack of clean water and adequate sanitation is a major cause of malnutrition and a significant contributor to extreme poverty. Safe, available water and improved sanitation would enable increased food production and create livelihood opportunities by freeing large amounts of time currently used for water carrying and recovering from disease. Adequate basic services such as water and sanitation can also be key factors in determining the level of private investment.
<b>Goal 2</b> Achieve universal primary education	The time required to collect and transport water over long distances prevents millions of girls from attending school. In addition, water related diseases cost hundreds of millions of school days each year throughout the world.
<b>Goal 3</b> Promote gender equality and empower women	Women are most often responsible for collecting and transporting water for up to 4 hours per day. Women are the carers of children made ill from lack of water, sanitation and hygiene. Lack of access to safe water and private sanitation facilities prevents girls and young women from attending school.
<b>Goal 4</b> Reduce child mortality	Poor quality water and inadequate sanitation is the second largest direct cause of child mortality and also contributes to many other deaths by stunting growth and contributing to malnutrition.
<b>Goal 5</b> Improve maternal health	Disease associated with maternal health can be reduced by the provision of clean water and adequate sanitation.
<b>Goal 6</b> Combat HIV/AIDS, malaria and other diseases	Lack of clean water, adequate sanitation and hygiene exposes people with HIV/AIDS to increased risk of infection. Poor sanitation increases the risk of malaria. Improving water and sanitation would reduce costs of water and hygiene related illnesses therefore making available additional resources to treat other diseases.
<b>Goal 7</b> Ensure environmental sustainability	Sustainable treatment of human waste is critical to improving environmental management, especially in areas of dense population.
<b>Goal 8</b> Develop a global partnership for development	Water and sanitation are cross-cutting issues. The development of partnerships to address the lack of access to safe water and sanitation will have flow on effects for other development goals.

## Box 1: The health benefits of improved water and sanitation

A study on the health benefits of total sanitation and improved water facilities in Bangladesh reports that the positive health impacts were considerable.

- Diarrhoea reduced by 99 per cent, dysentery by 90 per cent and other stomach-related problems (for example, intestinal worms) by 51 per cent.
- Monthly medical costs for common illnesses decreased by 51 per cent. Working days lost due to illness fell from 77 to 35 per year.
- School days lost due to illness fell from 16 to 7 days per year.

Source: AusAID Focus September 2006

## How is it going?

### Are we on target? Progress towards the water and sanitation MDG

Of the 22 developing countries in our region, 13 are not on track to achieve the water target and 10 are not on track to achieve the sanitation target.

Table 2 Progress towards the water and sanitation targets in our region

	Water				Sanitation				ODA
	access to water 2004(%)	2015 water target(%)	on track for MDG?	people without clean water 2004	access to sanitation 2004(%)	2015 sanitation target(%)	on track for MDG?	people without sanitation 2004	average annual water and sanitation aid from all donors in 2004 and 2005 AUD (millions)
Burma	78	78.5	YES	11,000,000	77	62	YES	11,500,000	0.9
Cambodia	41	64.5	YES	8,140,000	17	57	NO	11,450,000	18.3
Cook Is	94	97	NO	1,000	100	97	YES	0	0.2
Fiji	47	73.5	NO	450,000	72	84	NO	240,000	0.1
Indonesia	77	86	NO	50,620,000	55	73	NO	99,030,000	154.6
Kiribati	65	74.5	YES	30,000	40	62.5	NO	60,000	0.0
Lao PDR	51	74.5	NO	2,840,000	30	64	NO	4,050,000	9.4
Marshall Islands	87	98	NO	10,000	82	87	NO	10,000	0.0
Micronesia	94	94	YES	10,000	28	64.5	NO	80,000	0.0
Nauru			-	-			-	-	0.2
Niue	100	100	YES	0	100	100	YES	0	0.3
Palau	85	90	NO	3,000	80	83.5	YES	4,000	0.2
Papua New Guinea	39	69.5	NO	3,520,000	44	72	NO	3,230,000	9.7
Philippines	85	93.5	NO	12,240,000	72	78.5	YES	22,850,000	10.6
Samoa	88	95.5	NO	20,000	100	99	YES	0	23.0
Solomon Is	70	84.5	NO	140,000	31	65	NO	320,000	0.7
Timor-Leste	58	79	NO	370,000	36	68	NO	570,000	17.5
Tokelau	88	97	NO	100	78	69.5	YES	200	0.0
Tonga	100	100	YES	0	96	98	YES	4,000	1.9
Tuvalu	100	94.5	YES	0	90	89	YES	1,000	0.0
Vanuatu	60	80	NO	80,000	50	75	YES	100,000	0.2
Viet Nam	85	82.5	YES	12,470,000	61	68	YES	32,420,000	535.8
<b>Total</b>				101,944,000				185,919,000	783.3

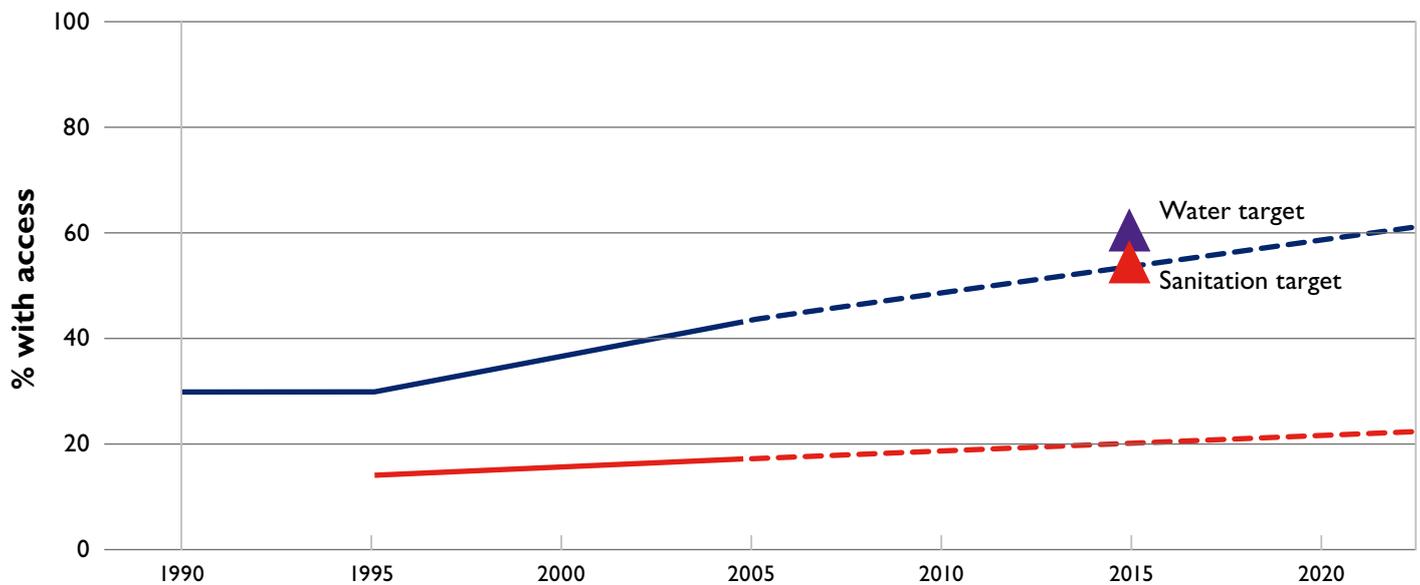
Source: Country water and sanitation figures from WHO/UNICEF Joint Monitoring Program. ODA figures are commitments from OECD DAC CRS database accessed 18 Feb 2007.

# WATER AND SANITATION

## Australia's neighbours

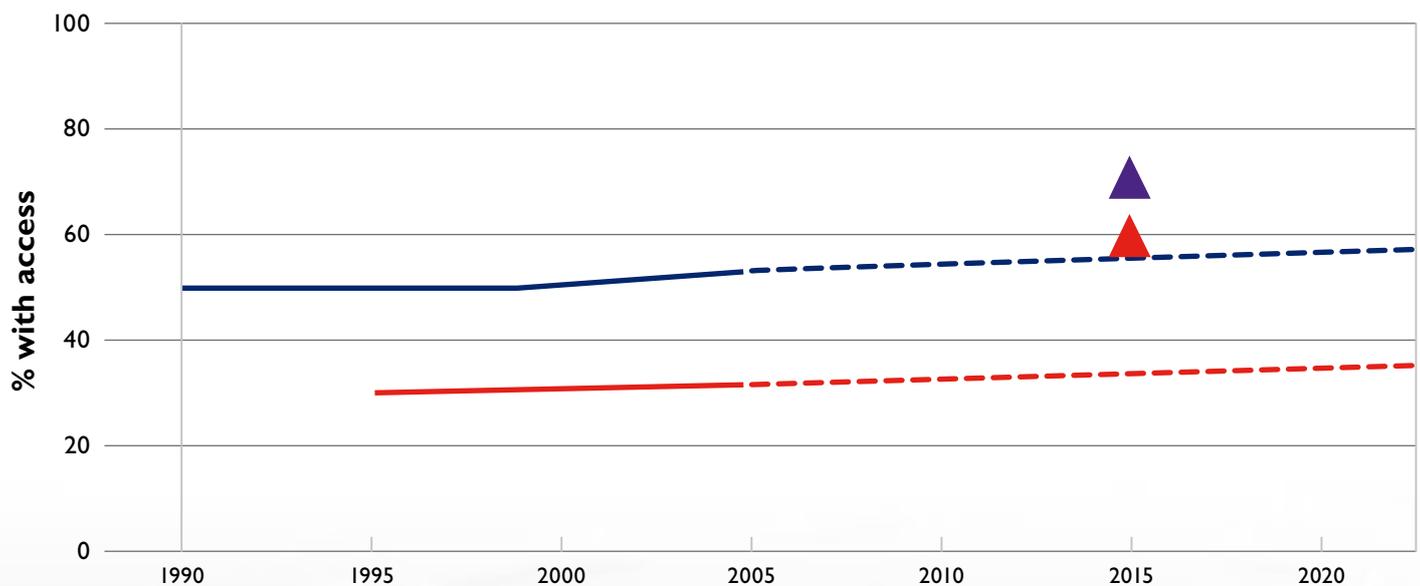
The situation is particularly bad in some of AusAID's major partner countries.<sup>22</sup> The charts below compare the current and projected trends in the proportion of populations with access to water and sanitation with the MDG targets. It is clear that most of the major developing countries in our region are off-track for either one or both of the water and sanitation goals.

Figure 1 Progress towards watsan targets – Cambodia



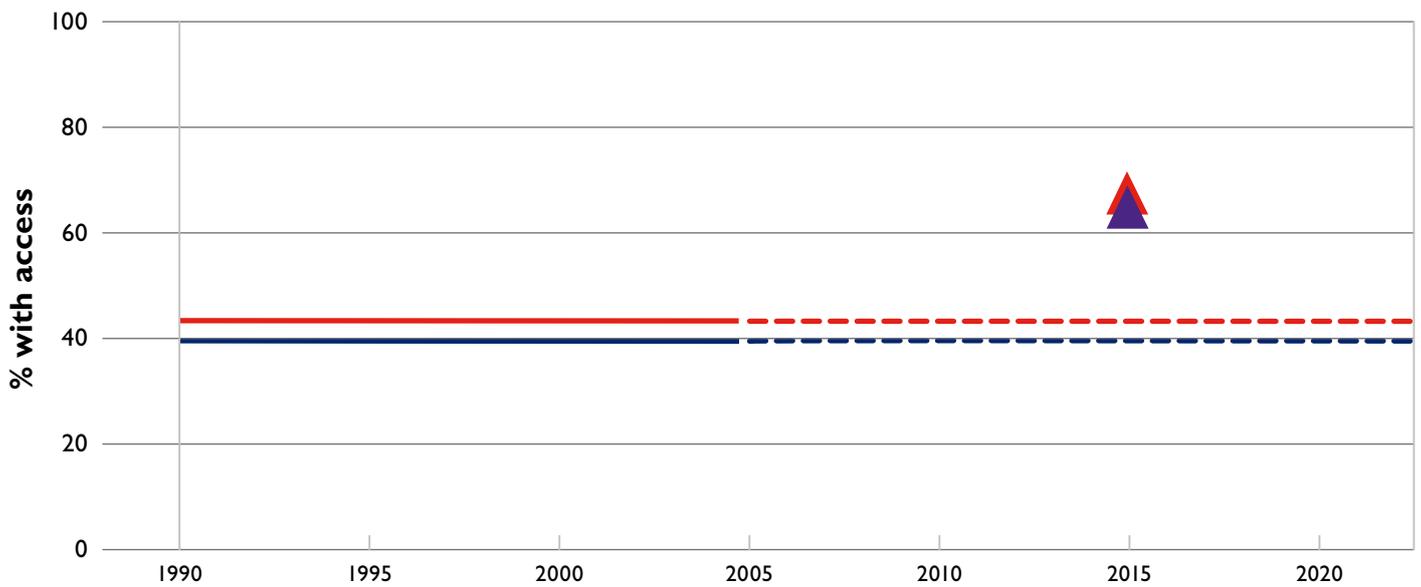
Source: WHO/UNICEF Joint Monitoring Program.

Figure 2 Progress towards watsan targets – Lao PDR



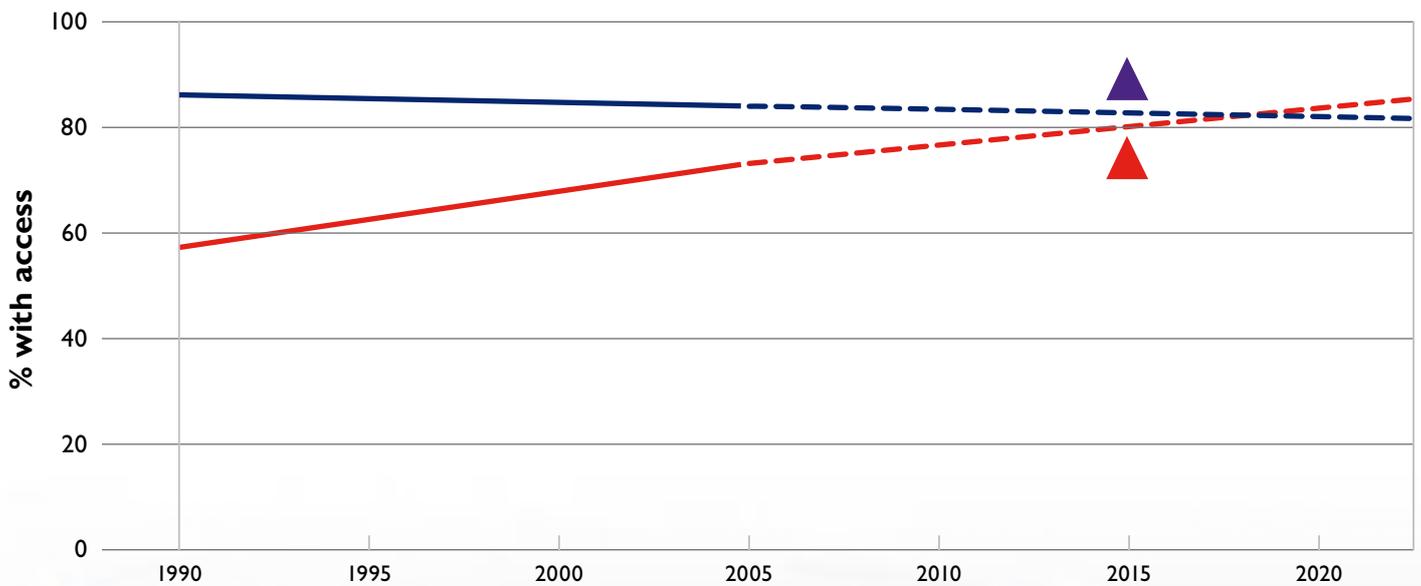
Source: WHO/UNICEF Joint Monitoring Program.

Figure 3 Progress towards watsan targets – PNG



Source: WHO/UNICEF Joint Monitoring Program.

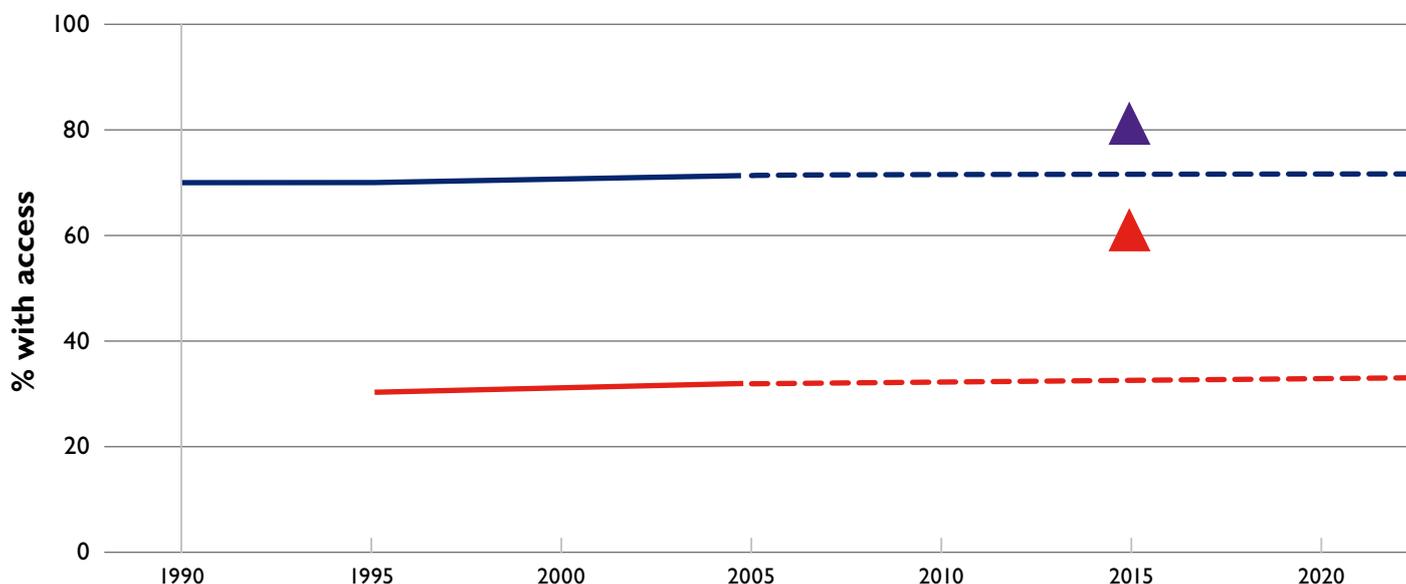
Figure 4 Progress towards watsan targets – Philippines



Source: WHO/UNICEF Joint Monitoring Program.

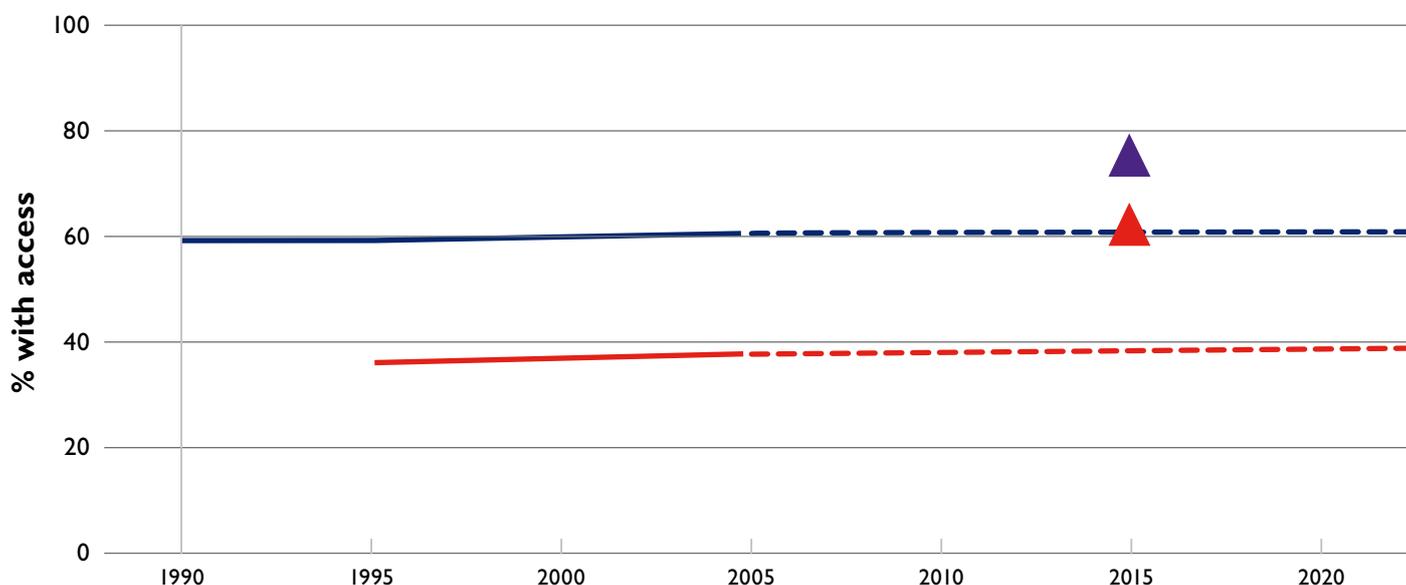
# WATER AND SANITATION

Figure 5 Progress towards watsan targets – Solomon Islands



Source: WHO/UNICEF Joint Monitoring Program.

Figure 6 Progress towards watsan targets – Timor Leste



Source: WHO/UNICEF Joint Monitoring Program.

## The reality may be worse

The available data clearly illustrates the serious situation in many South East Asian and Pacific nations. And the reality may be even worse.<sup>23</sup> Millions of poor people living in informal settlements are missing from national statistics.<sup>24</sup>

### Box 2: Missing millions in Jakarta

National data report improved water coverage rates of more than 90% for urban Indonesia. But surveys that factor in the large number of informal residents in Jakarta, a city of more than 12 million people, estimate that in fact less than 25% of the population is fully served by improved water sources. The rest rely on a variety of sources, including rivers, lakes and private water vendors. The discrepancy: some 7.2 million people.<sup>25</sup>

## Sanitation is critical, and is lagging

Global data highlight the gap between water and sanitation. In all regions and almost all countries, sanitation provision lags far behind access to water. In our region, the number of people without access to sanitation is almost double the number without access to water.<sup>26</sup>

The lack of sanitation is a challenging problem to address, as cultural taboos often prevent sanitation being talked about and demand is therefore not expressed. Yet improving sanitation and hygiene is crucial to alleviating human suffering and reducing poverty. Improved sanitation reduces diarrhoea morbidity on average by 37%<sup>27</sup> and when hygiene education and promotion of hand washing are included can lead to an additional reduction of diarrhoeal diseases by an average of 43%.<sup>28</sup>

## Women and girls are suffering more

Women are the major stakeholders in all development issues related to water. They are the ones who spend hours each day carrying heavy water containers to and from limited water sources, they take on carer responsibilities for ill health resulting from poor water supply, sanitation and hygiene, and they risk physical assault and rape when they go out at night to defecate in private.<sup>29</sup> Girls often cannot attend school if there are not adequate sanitation facilities or if they have to travel very long distances to fetch water for their families.<sup>30</sup> Yet women often remain on the periphery of management decisions and planning for water resources.<sup>31</sup>

## Urban and rural needs are different

The Organisation for Economic Cooperation and Development (OECD) reports that most water and sanitation aid is invested in a small number of large urban projects with middle income earners the largest beneficiaries.<sup>32</sup> Yet in many countries the bulk of people without access are in rural areas. Figure 7 shows the much larger number of people without access in rural areas of our region.

Cambodia's rural sanitation situation is parlous: 81% of the population is rural, and just 8% of people have access to sanitation – the lowest coverage in Asia. The hurdles facing Cambodia are high. Whilst some national, regional and local institutions are in place, their effectiveness is limited by their lack of capacity, regulatory frameworks, and integration and accountability mechanisms. In addition, there is no demand or motivation from the population. Political interest in rural sanitation is limited, so budget allocations are very small. Finally, the climate for and interest from private investment is also limited.<sup>33</sup>

Investing in rural areas is therefore fundamental for achieving the water and sanitation MDG targets and for alleviating suffering in our region's poorest areas. Yet it is also important to remember that urban population growth poses an ever-expanding challenge, particularly in peri-urban and slum areas.



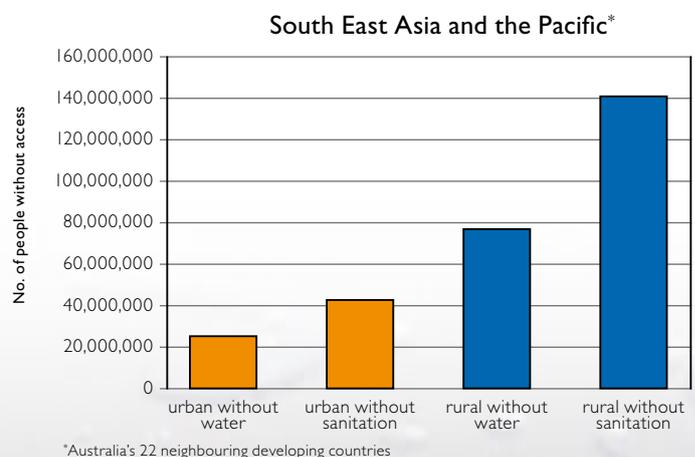
Low cost pour flush latrine, Rajshahi, Bangladesh  
Photo: WaterAid Australia

## There are institutional challenges

Responses to calls for governments in developing countries to step up their investment in the water sector have so far been mixed.<sup>34</sup> While there are clear improvements in most countries in the region, the pace of change is generally too slow. Although national plans for water and sanitation provision are accepted as an essential first step,<sup>35 36</sup> many countries in our region lack them.<sup>37</sup> Such plans, where they exist, need to be translated into policy, strategies, guidelines and action plans for ministries and local agencies. Again, these are often lacking.

Decentralisation of governance is an increasing phenomenon in our region and adds a layer of complexity to water and sanitation initiatives.<sup>38</sup> Decentralising both funds and responsibilities has been recognised as one of the keys to success, and having decisions made as close as possible to the users has been shown to be the most effective way of bringing services to the poor,<sup>39</sup> but local governments often lack adequate institutional and financial capacity to efficiently and effectively manage funds at the local level.<sup>40</sup>

Figure 7 Comparison of urban and rural needs



Source: WHO/UNICEF Joint Monitoring Program.

## How can we do it better?

Addressing the challenge in our region requires us to sharpen our focus on what works. The main limitations are not technical, but relate to prioritisation and planning, and the urgent need for capacity building, sector reform, resources and increased local involvement.

### Raise the priority for water and sanitation

**Why?** We know that water and sanitation are critical for health and development – they are foundational. Yet they remain a low priority on political and personal agendas. Urgent action on this front is needed.

**How?** Through communication and advocacy that influences commitment at all levels. At the international and national level, water and sanitation need to be brought into the centre of the development debate, with developing country governments encouraged to make them a central focus of local political and institutional agendas and budget planning. Department for International Development (DFID), the UK's bilateral aid agency, committed to this approach as part of its Water Action Policy<sup>41</sup> and it represents a critical role that bilateral donors can and should play. At the national level, Timor-Leste has set an objective of 80% access to water and sanitation by 2020, supported by a government commitment to match increases in water and sanitation funding made by other agencies.<sup>42</sup> At the local level, capacity building has raised awareness and resulted in successful community-led initiatives in Bangladesh, India and Indonesia (See Box 3<sup>43</sup>).



Easy access to clean water enables this young girl in Yunnan, China, to wash vegetables for her family's meal.  
Photo: World Vision Australia

### BOX 3: Total Sanitation – A Community Approach

The Community Led Total Sanitation (CLTS) approach to water and sanitation provision was developed as a collaborative approach in Bangladesh between WaterAid, the Village Education Resource Centre (VERC) and people living in rural areas. CLTS aims to stop open defecation, facilitate the safe disposal of faeces and institute handwashing. CLTS, also known as '100% sanitation' or 'total sanitation' has four key characteristics:

- It is a community led process
- Minimal or no hardware subsidies are required
- The focus is on collective behaviour change
- Results are characterised by rapid hygiene behaviour change

In the Bangladesh case, the principal method used by community members was the creation of peer pressure among households so that all households in a village adopted sanitation practices. The necessary sanitation infrastructure was provided by the community. The absence of any subsidies for latrine construction means that external finance needs are only for the facilitation roles of local government and their partners.

In Indonesia, the CLTS approach was piloted in six provinces in mid-2005. The first community (Kenogo, East Java) declared itself free of open defecation within only ten weeks. By December 2005, another nine communities had achieved open-defecation-free status, with a further 20 communities not far behind. The World Bank has expressed interest in expanding the CLTS approach across Indonesia, and is planning to implement the approach in 5,000 villages.

Source: WaterAid (2006) *National Water Sector Assessment Bangladesh* <[http://www.wateraid.org.uk/documents/plugin\\_documents/bangladesh\\_national\\_assessment.pdf](http://www.wateraid.org.uk/documents/plugin_documents/bangladesh_national_assessment.pdf)> and Robinson, A. (2006) "Total Sanitation: reaching the parts that other approaches can't reach?" *Waterlines*, 25(2), 8-10.

## Focus on sanitation separately from water

**Why?** Action on sanitation has been hindered by being classed as a sub-set of water development initiatives. Funding for the two is frequently spent mostly on water, resulting in the lag in investment in sanitation in the region.<sup>44</sup> In addition, sanitation issues differ markedly from those associated with water: sanitation is culturally difficult to discuss openly so raising awareness about it is a slow process, and although it has many private benefits, it is also a public good that benefits wider society.<sup>45 46</sup>

**How?** Stand-alone national level sanitation development policies with their own funding strategies represent the first vital step.<sup>47</sup> In the UK in the 1890s, it took a separate initiative focused on sanitation alone, to deliver significant health benefits (See Box 4). Donors need to make a stronger case to national governments about the links between sanitation and potential improvements in health, education, disease avoidance and school attendance, particularly for girls.<sup>48</sup> Finally, a focus on low-cost sanitation systems has been shown to bring sanitation within the financial reach of poor households and allow the use of local materials and labour (such as described in Box 3).

### BOX 4: Sanitation the greatest medical milestone

Sanitation was recently voted the most important medical milestone in the last century by some 11,300 readers of the British Medical Journal.<sup>49</sup> This is not surprising given that the advent of sewage treatment in London following the "Great Stink" resulted in drastic improvements. The infant mortality rate fell from 160 deaths per 1,000 live births to 100 in just over a decade - one of the steepest declines in history. The introduction of water 50 years earlier, by contrast, only resulted in a slow decline in mortality. This gap between provision of water and provision of effective sanitation was a public health disaster. Streets and rivers became polluted with sewage and the incidence of deaths from gastrointestinal illness was high. The separate initiative to fund and implement sanitation was critical to address these health and environmental issues. It required new and innovative funding and investment approaches, much like the challenge of today's MDGs.

## Conduct high-impact hygiene education as a part of every project and program

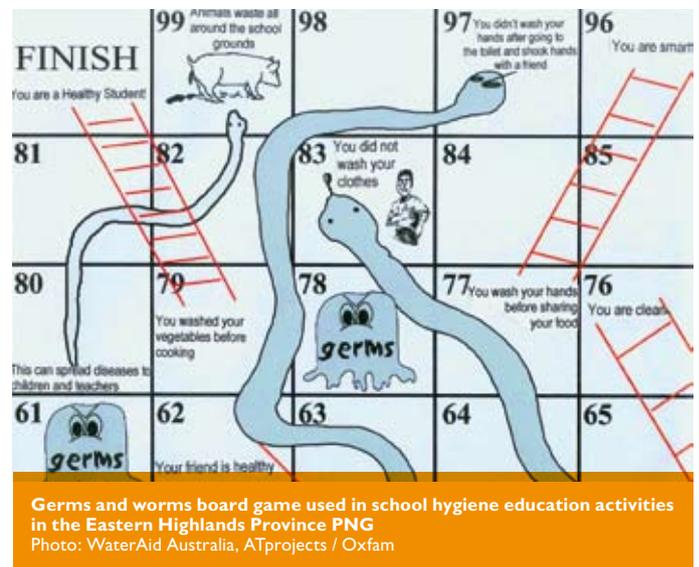
**Why?** Hygiene education has been found to be essential for achieving the broader health objectives of water and sanitation initiatives,<sup>50</sup> and also represents a cost-effective intervention even in the absence of safe water and improved sanitation.<sup>51</sup>

**How?** Every water or sanitation project or program should have a concurrent hygiene education and communication initiative. Handwashing with soap has been found to reduce diarrhoeal incidence by an average of 43%<sup>52</sup> and is thus a simple and extremely effective investment. A large-scale hygiene education program conducted in southern India established a strong link between wider project health outcomes and the hygiene interventions focused on handwashing, knowledge of the need to wash hands after defecation and cleanliness of the household.<sup>53</sup> Focusing project design and monitoring and evaluation efforts on changes in the health dimension of water and sanitation initiatives will help improve learning and focus in this area.

## Make services affordable for the poor

**Why?** To date, the main criticism of water and sanitation initiatives in the region is that they haven't reached the poor, whether they are in peri-urban, urban or rural areas.

**How?** Adopt policies and cost-sharing arrangements that work for the poor.<sup>54</sup> For water these include well-designed transparent subsidies that actually reach the poor such as lifeline tariffs (which need to be less than about 3% of household income) and targeted subsidies for connections for the poor so that a minimum of 20L/day is available to every citizen.<sup>55</sup> To put the lifeline tariff in perspective, in Sydney, the tariff for water and sewage services is less than 1% of the average wage. In the eThekweni Municipality, Durban, successful provision of the first six kilolitres of water per month (which translates as 50L per day per person in a 4 person family) has been achieved at no cost for every household in the municipality that is connected to the municipal water supply system.<sup>56</sup>



## Expand community-level actions, and always include women

**Why?** Low quality and quantity of meaningful participation has eroded the success of previous initiatives, for example, through failure to use or maintain facilities correctly.<sup>57</sup> Women collect and use water, suffer more from lack of facilities (often exposing themselves to sexual risk) and yet commonly have little say in decision-making about water and sanitation.<sup>58</sup>

**How?** Invest in demand-led approaches in which service providers respond to the needs of the community.<sup>59</sup> In some places, completely community managed systems have been highly successful and the Asian Development Bank (ADB) has utilised a range of different models for successful<sup>60</sup> involvement of civil society groups in rural areas.<sup>61</sup> These projects followed a strong critique of the implementation of the ADB Water for All Policy which identified a critical need for greater pro-poor focus supported by innovative, differential financing mechanisms, stronger two-way collaborations and dialogue with both users and local institutions. In Tuvalu, exploring social issues at length at the community level helped to ensure acceptability

(see Box 8). The voice of women can be successfully increased through offering women roles in decision-making, separate consultation opportunities and gender sensitive water and sanitation frameworks<sup>62</sup> (for example see Box 5).



Community mapping of houses, water points and latrines, Bangladesh  
Photo: WaterAid Australia

### BOX 5: Community engagement matters, and including women matters more

From 2002-2005, AusAID funded the Community Water Supply and Sanitation Program in three rural areas of Timor-Leste. Fundamental to the approach was getting the whole community (men and women, rich and poor) systematically involved in the planning and decision-making for improvements to their water supply, sanitation and environmental health. The communities decided which villages should receive priority, who would be involved in committees and the type of infrastructure to be provided. The government was involved in facilitating the planning and prioritising process and in overseeing construction and management to ensure that minimum standards were achieved.



New tap stand for Oeleu village piped water supply; Bobonaro district, Timor-Leste  
Photo: Paul Tyndale-Biscoe, IDSS.

Including women was reported to be difficult, as it went against social norms, however it was also found to be essential. The women knew much about the quality and quantity of available water sources over the course of the whole year and the women recognised the relationship between water, hygiene and improved health which is critical to the required household behaviour changes. Women's participation was promoted through organising separate opportunities for consultation with women throughout the process and ensuring that community management groups included women as well as men.

Overall, the community engagement process was time-intensive, but well worth the investment. Feedback at the end of the project from key stakeholders, including government counterparts, NGO program partners and community leaders, all pointed to the community engagement processes as the key means of achieving community management of the rural water supply facilities.

Source: Lessons Learnt document and AusAID Project Activity Report.<sup>63</sup>

## Create vital national-level plans

**Why?** The World Water Council and many others suggest that the current lack of coordination and prioritisation at the national level is one of the key barriers to investment and action.<sup>64</sup>

**How?** Separate national plans for water and sanitation need to be supported through international aid and effective communication strategies for policy dialogue between the local and national level. Such plans should aim for a minimum spending of 1% of GDP on water and sanitation.<sup>65</sup> The plans need to clarify the roles of donors, NGOs, and the public, informal and private sectors,<sup>66</sup> as well as specify needs and quantitative and qualitative targets for service delivery, expenditure and cost recovery based on local-national dialogue.<sup>67</sup> This will lead to identification of required policy actions, reforms and regulation. In terms of financing arrangements, national plans must address access to local markets, strategies for dissemination of funds, responsibilities to the local level and provision for phased investments.<sup>68</sup> As in Australia, whole of government approaches deliver dividends - significant involvement of health and education ministries in water and sanitation projects has been shown to enable capitalisation of synergies (for example, with regard to hygiene education) and is so far an under-utilised pathway which can support water and sanitation initiatives.<sup>69</sup> Finally, it is essential to distinguish between rural, urban and peri-urban areas as needs will differ and all must be addressed.<sup>70</sup> For instance, in Timor-Leste where a national plan has been developed, government resources to date have been expended mainly on urban areas, whereas the mostly rural population (77%) has greater need (currently only 56% have access to improved water and 33% access to improved sanitation).<sup>71</sup>

## Initiating more relevant governance reform

**Why?** Governance has proven to be critical in defining the success or failure of past attempts to provide water or sanitation.<sup>72</sup> However, governance reforms of the past that have focused on encouraging large-scale private sector investment should be avoided - these privatisations have often failed the poor.<sup>73</sup> Instead, reform needs to deal more explicitly with improved government provision and small-scale service providers that dominate current investment in the sector but who are currently inadequately regulated for quality and affordability.<sup>74</sup>

**How?** Public involvement in planning and reform is essential<sup>75</sup> and policy should be assessed on performance for the poor as well as dividends to private or public providers.<sup>76</sup> Development of a politically independent regulatory framework is needed that stretches from utility networks to informal providers<sup>77</sup> and encourages local small-scale providers.<sup>78</sup> Such regulation will also provide the security and stability required for investment to take place.<sup>79</sup> Attention must also be given to the relationship between integrated water resources management and local and regional water availability and uses. Catalysts to stimulate investment and partnerships have proved helpful in the Water for Asian Cities Program and demonstrate a role that bilateral aid agencies are well-placed to offer<sup>80</sup> (See Box 6). Directly addressing the needs of peri-urban areas requires a first step of documenting and mapping informal settlements, as has been done in Pakistan (See Box 7).

### BOX 6: Encouraging sector reform in urban areas: Catalysts can help

The UN Habitat Water and Sanitation Trust Fund was used in partnership with ADB and other donors to create the Water for Asian Cities Program in 2002 and provided \$10 million as grant in aid and \$500 million in fast-track credit to help provide a rapid response to help municipalities to help the poor. The objective of the initiative was to create an enabling environment for new investments into the urban water and sanitation sector to impact significantly on the poorest segment of the population. The program operates as a broker or catalytic link between development banks and donors on the one hand and developing countries on the other hand. The fast-track credit overcomes the inability of the banking sector to respond quickly enough. A number of tools are used to help countries on the demand side to qualify for investment funds that they would otherwise be unable to access. Bilateral donors have the opportunity to play a similar role.

Source: <http://www.unhabitat.org/> Accessed February 2007

### BOX 7: Putting poor people on the map: an essential first step to urban sector reform

An NGO in Pakistan, Orangi Pilot Project-Research and Training Institute (OPP-RTI), has been working to improve the provision of sanitation and other services in Orangi and other informal settlements in Karachi. The Low Cost Sanitation Program enables low income families to finance, manage and maintain sanitary latrines in their homes, underground sewerage lines in the lanes and secondary sewers. As part of the program, OPP-RTI undertook mapping and surveying of informal settlements to overcome the difficulties associated with a lack of information showing plot boundaries and existing infrastructure when attempting to install new infrastructure and services. Planning agencies and local governments have recognised the success of this initiative in Orangi which has implications for how infrastructure is planned, financed and managed.

Source: Hasan, A. (2006). *Orangi Pilot Project : the expansion of work beyond Orangi and the mapping of informal settlements and infrastructure. Environment and urbanization* ; vol. 18, no. 2 ; p. 451-480. DOI: 10.1177/0956247806069626

## Strengthen local institutions and mechanisms for service delivery

**Why?** The World Bank and others have found that that current knowledge and skills are often inadequate for achieving improvements in service quality and increased access.<sup>81</sup>

**How?** Capacity building at regional and local levels, particularly through direct work with government agencies and utilities enables such learning. This work must be done in addition to funding discrete “projects”. Service delivery can be enhanced by improving the incentive framework for “owners” of utilities or service providers<sup>82</sup> and through innovative models of output-based aid. The mechanisms for service delivery need to be suited to the context. For instance in Jakarta, a significant investigation of the urban poor resulted in knowledge of household demands and the level of community organisation. A catalogue of different service levels and commercial options was matched to this information and offered to the community.<sup>83</sup>

## Make decisions with a focus on long-term sustainability

**Why?** Environmental, social and economic issues are inter-related, and addressing these inter-relationships is critical for sustainable development. For example, climate change is impacting on water availability<sup>84</sup> and inappropriate technologies (e.g. flush toilets where water availability is low) exacerbate rather than resolve problems.<sup>85</sup> Equally, ignoring social customs, views and motivations (or lack thereof) also results in inappropriate solutions that are unacceptable for the people for whom they were intended and subsequently fail.

**How?** Focus on all three dimensions of development (environmental, social and economic) within a specific local context to build on synergies between the three. Build integrated resource planning into project planning and evaluation. It is increasingly used in the Australian and international water industries to analyse and compare qualitatively different options (e.g. supply and demand side approaches, centralised and distributed approaches), and to achieve appropriate cost-sharing outcomes for all stakeholders.<sup>86</sup> Engagement with social norms, traditions and taboo, particularly with regard to sanitation, is also essential to either identify socially acceptable solutions, or to shift perceptions to motivate and create ‘demand’, and to ensure local institutional functionality. In environmental terms, it is critical to ensure that natural resources are managed for the long term, particularly in the face of climate change, which requires concurrent consideration of both water and nutrient cycles, and catchment scale integrated water resources planning to be closely linked to domestic water resources planning and provision.

## Include new ecological sanitation approaches

The priority must be on assisting communities move from open defecation to some form of effective sanitation with the resulting health benefits. Whilst doing this it is useful to provide communities with a range of options that may be appropriate immediately or migrated to over time.

**Why?** Leading edge approaches to sanitation in the developed world increasingly recognise that large-scale, highly centralised, water-borne approaches to sanitation are problematic. There are many reasons for this: large scale, highly centralised approaches perversely require more investment in transporting sanitary waste than in its treatment; water-based sanitation approaches create nutrient and pathogen pollution problems in surface and ground water, and use precious fresh water to dilute nutrients, making their reuse more difficult and expensive.<sup>87</sup> Finally, the impending peak in mineral phosphorus resources presents a serious global food security issue<sup>88</sup> and urine could be part of the answer, because it is a highly concentrated source of nitrogen and phosphorus. Developing countries have an opportunity to leapfrog this problematic path: in his opening address at the Second South Asian Conference on Sanitation in Islamabad in September 2006, the Prime Minister of Pakistan said: “It is the compelling need of the hour to make efforts by adopting new ways of thinking about this challenge... In sanitation, new approaches should ensure availability of safe drinking water, prevention from water pollution, and recycling of nutrients.”<sup>89</sup>

**How?** Expand the range of sanitation systems presented to communities. Provide communities with options and information about the social, economic and environmental impacts of small-scale, distributed systems, and dry systems, such as composting toilets. For example, the nutrient (nitrogen and phosphorus) value in urine and faeces has been shown to pay for ecosanitation toilets.<sup>90</sup> Such systems have been shown to be cheaper than conventional systems in urban areas in China where urine diversion and dry composting toilets have been built for some 800 urban households in a multi-storey building in Erdos Municipal District of Mongolia,<sup>91</sup> peri-urban areas of South Africa, and rural areas in Zimbabwe and Mozambique,<sup>92</sup> and are increasing in use in the Pacific where high ground water tables and sensitive marine environments suffer from poor sanitation practices (See Box 8).

### **BOX 8: Self-seeding approach to practical capacity building in sustainable sanitation in Tuvalu**

This sanitation project looks to actually save money for the poor and to stimulate demand-led initiatives to improve sanitation, solving the long standing environmental and health problems of current sanitation systems and practices and has immediately been replicated by the people of the nearby island of Kiribati. As a part of the International Waters Programme (IWP) in the Pacific, a capacity building Communications and Sanitation Training Programme was developed in Tuvalu during 2006. A cost-benefit analysis revealed that existing septic systems and poor sanitation were costing \$500,000 per year to the island while continuing to contaminate the high ground water table and surrounding coastal water, so dry sanitation (ecosanitation) represented an ecologically sound win-win investment.

In the interest of generating practical skills and overcoming barriers to introduction of such systems, training in how to construct one was organised. The training brought together players from the community, NGOs, and public and private sector building contractors, a critical step in improving action and coordination with regard to sanitation, and was prefaced by in depth investigation of social perceptions around defecation, and handling of excreta and the acceptability of composting toilets and gender implications. Participants received a certificate for their new skills which helped raise the status of the training and sanitation generally. Following the training, the Tuvalu government plans to include dry composting toilets in the building code and as a possible requirement for new houses. This kind of bottom-up project demonstrates that the MDGs need motivation and practical capacity building at the community level as much as, or more than, finance and technology.

*Source: Crennan, L (2006) Integrated Communications and Sanitation Training Programme: Project Report and Padma Lal, Kelesoma Saloa and Falelili Willy. (2006) Economics of Liquid Waste Management in Funafuti, Tuvalu: Cost Benefit Analysis.*



**Trainees around the composting toilet in Tuvalu. The trainee woman doing rendering represents Funafuti Women's Group and plans to seek funding to run a similar training for women (who have never done any building before). Watching her is the carpenter from Public Works, the Senior Health Inspector, and a guest trainee from Ministry of Health in Kiribati, which has led to immediate mobilisation of resources for replication of the training in their country. Photo: Leonie Crennan**

## What more could Australia be doing?

### Australia is helping, but the question is, is it enough?

AusAID policy statements recognise the critical link between safe water and sanitation provision and long-term economic growth. In 2005, AusAID produced a pragmatic and successful Safe Water Guide, aimed at saving lives in developing countries through improved quality of drinking water.<sup>93</sup> The two planks of AusAID's water policy - strengthening governance and assisting with infrastructure provision - are appropriate, given Australia's expertise and the grant-based nature of AusAID funds. Some countries have received and will receive support for sorely needed projects, such as the \$50 million investment from 1992-2001 to provide improved water supplies to four provincial towns in Vietnam<sup>94</sup> and a new five year rural water supply program currently being tendered out for Timor-Leste. AusAID has also provided research funding for the Australian Water Research Facility to examine regional governance issues and the implications of total water cycle management on negotiating different uses for water.

However, three key areas need to change in order for Australia to play the leading role it aspires to in our region. Firstly, the quantum of AusAID's investment in water and sanitation represents a serious shortfall between policy and practice in this critical area. AusAID reports the following contributions to all regions for water and sanitation programs:

Table 3 AusAID contribution to water and sanitation<sup>95</sup>

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
<b>\$AUD in 2005 (millions)</b>	54.7	36.2	43.1	52.5	66.5	54.2
<b>% of aid program</b>	2.5%	1.9%	2.1%	2.5%	3.1%	2.3%

This compares with an estimated annual aid requirement from Australia of \$350 million, based on our share of OECD donor wealth.<sup>96</sup> Our government's commitment to increase our overall aid budget to \$4 billion by 2010 is a promising first step but so far firm commitments to water and sanitation are negligible. The Netherlands, with a similar sized economy to our own, has committed to an output of providing 50 million people with sustainable access to safe drinking water and sanitation by 2015<sup>97</sup> and contributed \$343 million to this end in 2005,<sup>98</sup> compared with the AusAID investment of just \$54.2 million that year.<sup>99</sup>

Secondly, the focus of Australian practices have not always aligned with the big picture of our commitment to sustainable development and poverty alleviation. For example, the health and hygiene dimension of some AusAID infrastructure projects has received limited attention, and in others a large-scale private sector focus has not led to beneficial effects for the poor.<sup>100</sup>

Thirdly, sanitation is largely missing in current AusAID policy, associated high level documents, and organisational structure. The current water policy mentions sanitation only briefly, and fails to refer to hygiene or hygiene education. Perhaps more significantly, sanitation is essentially absent from AusAID's White Paper – in the entire document, the word appears just once. In addition, the current AusAID organisational structure leaves domestic water and sanitation without an obvious home. This oversight seems anomalous in the face of the indisputable evidence of the scale of the need in our region, the impact of sanitation and hygiene on health and economic development, and AusAID's commitment to investing in people and accelerating economic growth.

The following recommendations provide constructive guidance on how Australia and particularly AusAID, might respond to these shortcomings.

#### Recommendation 1: Invest more

AusAID needs to increase its commitment to water and sanitation to reach around \$350 million annually. This would be about 9% of the total likely aid budget of \$4 billion in 2010. Critical to such investment will be the following:

- 1.1 Ensure that funding for water and sanitation is central to AusAID pipeline expenditure planning within the new task forces for Infrastructure, Health and Environment.
- 1.2 Consider water and sanitation needs in every existing and new country strategy by bringing both water and sanitation into central focus in discussions with partners.
- 1.3 Target spending at those countries most at risk of failing to meet MDG targets for water and sanitation and which are receiving the least support.

#### Recommendation 2: Invest more wisely

Ensuring the effectiveness of water and sanitation initiatives requires that AusAID increase its in-house specialist knowledge in this area, improve monitoring and evaluation processes, invest in development research in this sector and capitalise on a broad range of Australian water expertise. Without such support, it will be difficult to meet the multiple challenges of delivering economically, socially, and environmentally sustainable water and sanitation governance and infrastructure. The following actions are essential for AusAID to invest more wisely:

- 2.1 Employ senior specialist advisors to support water and sanitation programs in the same way that there are currently advisors for sectors such as economic development, rural development, health and education and environment.

- 2.2 Improve monitoring and evaluation of AusAID water and sanitation projects, particularly focusing on project effectiveness and the capture, discussion and dissemination of lessons learnt and unplanned change. This will be critical to guide future strategic investment and project design and contribute to on-going organisational learning in this area.
- 2.3 Direct a portion of the flagged increase in AusAID development research funds to better understanding what works in our region and translate it into capacity building and appropriate governance and economic arrangements.
- 2.4 Mobilise new Australian links to the region that will facilitate sharing of a broader range of Australia's water expertise beyond catchment management, to include urban water supply planning, small-scale and sustainable approaches to water and sanitation infrastructure and social processes for water planning, decision-making and management. Targeting AusAID scholarships to strategically increase developing country technical and management capacity in these areas would also be beneficial.

**Recommendation 3: Advocate for sanitation; separate it from water**

In line with international calls, AusAID needs to raise the profile of sanitation and hygiene in all its dealings, and ensure that it is a key element of all country strategies. Sanitation must be recognised as being at the core of preventive health outcomes and that its absence undermines the growth and productivity of societies.

- 3.1 Address AusAID's lack of a sanitation policy by developing a complementary policy to the water policy, and include hygiene education in both the sanitation and water policies.
- 3.2 Advocate for, facilitate and support the development of a national plan in each partner country, promoting 'ownership' of sanitation by an appropriate government ministry.
- 3.3 Work towards widespread replication of the many promising demand-led sanitation projects that demonstrate that sanitation need not be a high-cost investment when dealt with at the local scale and through a capacity development approach.
- 3.4 Include dry sanitation and other ecologically sustainable approaches as a technology option that solves multiple environmental and health issues posed by water-based systems.

**Recommendation 4: Advocate national approaches to water and sanitation**

Promoting coordinated and concerted action in this sector will require that AusAID support each partner country to develop a national approach that focuses on national plans for water and sanitation, their ownership by a coordinating body, and formal monitoring of their implementation progress.

This recommendation lines up well with the AusAID White Paper focus on governance and capacity building and strengthening of regulatory frameworks. Support of a national approach would entail assisting the following, separately, for water and sanitation:

- 4.1 Develop a National Plan for Safe Water and a National Plan for Sanitation with targets consistent with those established in countries' national development strategies. Each plan should set out a framework that clearly establishes the role of donors, NGOs, the public and informal sectors and

any private sector roles. The plan should be based on an assessment of need, the required policy actions and reforms, the timelines and costs with identified financing shortfalls. It must address the needs of the poor in urban, peri-urban and rural environments.

- 4.2 Allocate a coordinating body for each plan, constituted as a multi-stakeholder coordinating body at central government level with complementing local coordinating bodies at the most appropriate local level. The make up of this national body would include members of the water and sanitation 'policy community'. That is officials, politicians, sector practitioners, academics, related sector representatives, consumer groups and donors.
- 4.3 Design a monitoring and evaluation system charged with overseeing progress of each national plan, identifying key bottlenecks to service delivery and proposing remedial policies. Both quantitative and qualitative monitoring and evaluation processes will be essential and should be strengthened to ensure effectiveness.

**Recommendation 5: Take a regional leadership role**

As a major bilateral aid donor, there are two specific ways in which AusAID can take a regional leadership role in the region: ensuring investment partnerships and leveraging for better processes. As a leading donor in the region, Australia could take a lead role in implementing the Paris Declaration, and in creating regional fora focused on water and sanitation.

- 5.1 Take a prominent role in creating investment partnerships with the development banks and other major bilateral donors over the next 5 years to deliver water and sanitation infrastructure that is functional, accessible, and sustainable.
- 5.2 Use grant funding in the manner suggested by the World Water Council to leverage better processes (such as strengthening regulatory frameworks) and strengthen partnerships between local and national government, users, public and private operators, local and international financiers.<sup>101</sup> Also work with partners to create feasible financing and repayment mechanisms and exploit local financing options. In this way, AusAID could play a critical sector coordination role to bring together a range of stakeholders to contribute to policy design, planning and review progress.
- 5.3 Seek accountability and progress on the indicators in the Paris Declaration for Aid Effectiveness for country partners, as these indicators apply to the water and sanitation sector. Most of the countries in our region are signatories to this declaration and its sound principles will promote appropriate local mechanisms and coordination in the water and sanitation sector.
- 5.4 Increase analysis of and continue to monitor the specific water and sanitation governance and infrastructure needs of the poor in both rural and peri-urban regions in each partner country. This is a necessary pre-cursor to playing a strategic, regional leadership role.
- 5.5 Take a regional leadership role in creating and maintaining a South East Asia and Pacific coordinating body and forum for oversight of progress in water and sanitation provision.

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## Footnotes

1. Australia's neighbourhood contains fifteen Pacific developing countries that use Australian assistance (Cook Is, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Is, Tokelau, Tonga, Tuvalu, Vanuatu) and seven South East Asian developing countries (Burma, Cambodia, Indonesia, Lao PDR, Philippines, Timor-Leste, Viet Nam).
2. Based on Hutton and Haller 2004 using the WPRB2 sub-regional results (weighted for the total population in the seven Southeast Asian countries in our paper) plus the WPRB3 Pacific results. All \$ figures are updated to A\$2005 using the OECD DAC deflator and a 75c exchange rate.
3. United Nations Development Program. *Beyond scarcity: Power, poverty and the global water crisis: Human Development Report 2006: UNDP*, 2006.
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7. Many references including WHO and UNICEF Joint Monitoring Program (2006) *Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade*.
8. Number of child deaths by country for 2004 from UNICEF *State of the World's Children Report 2006 Table 1. Cause of death in each country based on year 2000 estimates - World Health Organisation Core Health Indicators database* [http://www3.who.int/whosis/core/core\\_select\\_process.cfm#](http://www3.who.int/whosis/core/core_select_process.cfm#) Accessed 5/12/2006.
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12. OECD DAC CRS database accessed 18 Feb 2007, commitments in Australian dollars at 75c to the US\$ exchange rate. This is the annual average for 2004 and 2005. The global total excludes contributions to Iraq which is gaining extra support because of the current war.
13. Ibid.
14. Van Hofwegen, P. (2006). *Task Force on Financing Water For All: Enhancing access to finance for local governments*. Financing water for agriculture. Chaired by Angel Gurria, World Water Council: 78.
15. <http://www.dfid.gov.uk/news/files/pressreleases/pr-hilary-water-22mar05.asp> Accessed 13 February 2007.
16. The UNDP in the 2006 Human Development Report suggest that an additional US\$10bn (over the estimated current \$14-16 bn which excludes wastewater treatment) will be required each year to reach the MDG water and sanitation goals. They suggest a total of around US\$7.5bn will be required in aid. They point out that this is a minimum as it based on using the simplest and lowest cost technology. A more realistic estimate takes account of the likely need for more expensive sewer connections and wastewater treatment in many urban areas. Based on the congruent midpoint estimates from WaterAID 2001 *Financing Water and Sanitation 2001 & UN 2002 Preparatory Report on Watsan Costs for WSSD* this suggests a total figure of around US\$53billion per year. This figure is also around the midpoint of most other estimates which include some component of wastewater treatment - see *Toubkiss J 2006 Costing MDG Target 10 on Water Supply and Sanitation (World Water Council) and Mehta L 2005 G20 Communique on water: An Independent Arbitrator's Perspective (Institute of Development Studies) and UNDP 2006 Human Development Report 2006 p113* - and is in accord with the average costs of middle level sanitation technology (see UN Millennium Project 2005 *Health, dignity and development: What will it take?* p89) applied to the 2+ billion people intended to gain sanitation under the Millennium Goal. If donors assume one-third of this burden then total aid required would be around US\$17.5 billion per year or A\$23.3 billion. This burden sharing ratio acknowledges that the bulk of responsibility should lie with developing countries but that significant support is required from donors if the targets are to be met, particularly in the low income countries.
17. The 22 developing countries in South East Asia and the Pacific make up 9% of the developing world's population, 10% of those without access to water and 7% of those without sanitation. We therefore suggest that approximately 9% of global water and sanitation expenditure is needed in this region.
18. Based on Hutton and Haller 2004 using the WPRB2 sub-regional results (weighted for the total population in the seven Southeast Asian countries in our paper) plus the WPRB3 Pacific results. All \$ figures are updated to A\$2005 using the OECD DAC deflator and a 75c exchange rate.
19. For the Copenhagen Consensus 2006 ranking see <http://www.copenhagenconsensus.com/Default.aspx?ID=783>.
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22. AusAID White Paper identified major partner countries/focus areas as PNG, Indonesia, Philippines, the Mekong countries, Melanesia and East Timor: Executive summary page 6.
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39. Ibid.
40. Ibid.
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43. Case study information is from the world bank website, <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/INDONESIAEXT/0,,menuPK:287081~pagePK:141132~piPK:141107~theSitePK:226309,00.html>, Waterlines journal Vol 25 number 2 article by Andy Robinson and the WaterAid Bangladesh National Water Sector Assessment.
44. The World Bank (2006). Explanatory Notes on Key Topics in the Regulation of Water and Sanitation Services: 92.
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