

1 Introducing water and corruption

In her lead chapter for the thematic section of the Global Corruption Report 2008, Janelle Plummer outlines the main parameters of the global water crisis, provides an overview of the different types and dynamics of corruption in the sector and explores their implications. Charles Kenny adds to this overview with calculations that provide a stark reminder of the fatal consequences of corruption in the water sector.

Water and corruption: a destructive partnership

Janelle Plummer¹

Water is vital for people, food, energy and the environment. When water is scarce or absent, countries and their citizens suffer incalculable costs – economic, political, social, cultural and environmental. Corruption exacerbates these impacts and amplifies the pivotal challenge of water governance. Urgent action is needed to mobilise all stakeholders to develop practical ways of tackling corrupt practices in the many and varied parts of the water sector. This is the central message of the *Global Corruption Report 2008*.

The global water crisis: a crisis of governance

The story of corruption in the water sector is a story of corruption in resources and services vital for life and development. It is also the story of a sector in crisis. Each year millions of people die of waterborne diseases because access to safe drinking water and adequate sanitation has not been prioritised. In 2004 more than 1 billion people lacked access to safe drinking water and 2 billion did not have access to adequate sanitation – and, despite successes in many regions, the population without access to water services is increasing. Corrupt practices exacerbate these gaps, removing investment that might be used to extend services to the poor, diverting finance from the maintenance of deteriorating infrastructure and taking cash from the pockets of the poor to pay escalated costs and bribes for drinking water.

¹ Janelle Plummer was a governance and anti-corruption consultant, currently working for the World Bank. She is currently a governance adviser in the World Bank. This chapter draws on J. Plummer and P. Cross, 'Tackling Corruption in the Water and Sanitation Sector in Africa: Starting the Dialogue', in E. Campos and S. Pradhan (eds.), *The Many Faces of Corruption* (Washington, DC: World Bank, 2007). The opinions expressed are those of the author and do not necessarily reflect those of the World Bank, its executive directors or the countries they represent.

Water scarcity is also a significant and growing problem. The livelihoods of hundreds of millions of people across all regions are threatened from shortages of water for irrigation. Agriculture uses around 70 per cent of the water drawn from rivers and groundwater. High levels of human activity, the pressures of increased water demand and higher populations take their toll.² Climate change adds new pressures to the problem. By 2025 more than 3 billion people could be living in water-stressed countries.³ Over the coming decades crop yields are expected to fall by 25 per cent and global malnutrition may rise by nearly as much if current projections on climate change prove true.⁴

Managing water requires a careful balance of food security, poverty reduction and ecosystem protection. Degraded ecosystems increase the risk of disaster – removing buffers against floods, droughts and other natural hazards. The impact of environmental degradation, inadequate water management and chronic underinvestment are known to us all: the tragedy of Darfur is both a collapse of governance and an emergency of land and water degradation that has escalated to an unprecedented humanitarian disaster.

At the heart of these failures is the crisis of *governance* in water – *a crisis in the use of power and authority over water and how countries manage their water affairs*.⁵ And yet, despite the imperatives of water for citizens' livelihoods and a country's growth, water governance has not been prioritised. Institutional dysfunction, poor financial management and low accountability mean that many governments are not able to respond to the crisis, and weak capacity and limited awareness leave citizens and non-governmental organisations (NGOs) in many countries unable to demand change.

Water and corruption: a concern for all

Corruption in and around the development of the water sector is a key dimension of this governance failure. It is evident in the drilling of rural boreholes in sub-Saharan Africa, the operation of treatment facilities in Asia's urban areas, the construction of hydroelectric dams in Latin America and the daily abuse and misuse of water resources entrusted to governments and other decision-makers around the world. Efforts to tackle the multiple aspects of corruption form a critical part of the battle to get water to people who need it. Corruption is both a cause and an effect of weak governance in the sector.

While the impacts of corruption are more extreme in developing countries, the phenomenon of corrupt water is not one limited to low- or middle-income countries. In Europe, North America and Australia, corrupt practices involving or affecting water resources and services are not uncommon. Industrialised countries have their own forms of nepotism in their board-

2 United Nations Development Programme (UNDP), *Human Development Report 2006. Beyond Scarcity: Power, Poverty and the Global Water Crisis* (New York: Palgrave Macmillan, 2006).

3 Ibid.

4 Ibid.

5 Adapted from Department for International Development (DfID), 'Governance, Development and Democratic Politics: DFID's Work in Building more Effective States' (London: DfID, 2007).

rooms and institutions; fraud and embezzlement feature frequently in the press. Even high levels of regulation and oversight have not prevented corruption from playing out where the public and private sector meet – or from being exported abroad, where governance and controls are weaker.

The global push by the international community to remedy the lack of access to water and sanitation for the world's poorest citizens provides an unprecedented opportunity for governments, the private sector and civil society to work in partnership to combat corruption in drinking water and sanitation. To speed progress towards ending poverty, 189 countries committed in 2000 to the United Nations Millennium Declaration.⁶ Better water and sanitation services for all people form part of the declaration's eight goals – the MDGs – that world governments have pledged to achieve by 2015.

Since the MDGs are inextricably linked to each other, achieving improvements in water and sanitation produces positive impacts on the other goals – from reducing poverty and hunger, to cutting child and maternal mortality rates and eliminating gender inequalities. Unless primary blockages such as corruption are identified and addressed, it will be impossible to meet the MDG target of halving the number of people without access to safe drinking water and basic sanitation. Too much money is being lost from sector inefficiencies. Based on country and regional estimates compiled by the UN, fifty-five countries will fall short of increasing water access sufficiently, while another seventy-four nations are off track in realising promised improvements in sanitation.⁷

Sub-Saharan Africa is one of the regions where progress is slow and challenges for combating corruption are great. The 2007 *Corruption Perceptions Index* (CPI) compiled by Transparency International finds that nearly a half of the twenty nations that perform worst in the index come from the region.⁸ And, according to the latest data, 63 per cent of the region's citizens lack basic sanitation facilities – an insignificant improvement from the 68 per cent recorded in 1990, the baseline year used to track the MDGs' progress towards the 2015 target year.⁹ Over the same period the number of people in the region without access to water has actually increased by more than 20 per cent, due to high population growth rates.¹⁰

Water is an immensely political issue, wide open to manipulation, globally and nationally, and open to capture and conflict among communities and households. These macro and micro dimensions mean that the dialogue over corruption in water must reflect the diversity in practices, and actors, their motivations and levels of impact. It is vital that all countries

6 Subsequently, in 2002, the target for sanitation was adopted. This was a key development, as sanitation is often excluded from consideration.

7 UNDP, 2006.

8 These figures are based on the 2007 results of the Corruption Perceptions Index, available at www.transparency.org/policy_research/surveys_indices/cpi/2007.

9 Data based on 2004 figures provided by the UN Department of Public Information, 'Africa and the Millennium Development Goals, 2007 Update' (New York: UN, 2007).

10 Composite data are misleading, but there is also some debate over the accuracy of country-level data and the internal disparities and horizontal inequalities that are hidden in aggregate statistics.

urgently learn about the corruption taking place in their water sectors, identify the impacts and develop practical and targeted anti-corruption policies and tools.

The nature and scope of corruption

Corruption – the abuse of entrusted power for personal gain – can be found in a vast range of interactions at all levels and in all aspects of the water sector. At present, however, the diagnosis of corruption in the water sector is still developing, and anti-corruption efforts are often marred by narrow views and biased perceptions of what corruption is and where the key risks lie. To overcome these obstacles, a better understanding is needed of what forms corruption takes in the sector, where it is concentrated and what the incentives of stakeholders are. Given the diversity of the water and sanitation, irrigation, water resources management (WRM) and hydropower problem, this represents a major challenge.

Most types of corruption are found in the water sector. When bureaucratic or *petty* corruption occurs, a hierarchy of public servants abuse their power to extract small bribes and favours. A water meter reader offers to reduce a customer's bill in return for payment or a utility official only responds to water service complaints when favours are traded. When *grand* corruption happens, a relatively small cadre of public and private sector actors are involved and the rewards are high. For example, public funds for a rural water network are diverted into the pockets of ministry officials or a large dam construction contract is captured by a group of colluding companies. When *state capture* occurs, the decision-making process and enforcement of water policies are manipulated to favour the interests of a few influential water users or service providers at the expense of the broader public.¹¹

A corruption risk map captures the different types of corruption in the water sector, including fraud, embezzlement, bribery, collusion and nepotism. It points towards the differing incentives of actors and various instruments needed to tackle the diverse nature of the corruption problem.

Typically there are three sets of corrupt interactions.

- Corruption in water occurs between *public officials and other public officials*. This includes corrupt practices in resource allocation – such as diverting funds for a water supply network to pay for upgrading a road near a politician's house. It can also involve using bribes to determine the outcome of personnel management decisions – such as payments to individuals for transfers and appointments to lucrative positions. The larger the potential salary, the higher the bribe to get the post.
- It also occurs between *public officials and private actors*, and includes forms of bribery and fraud that occur in relation to licensing, procurement and construction. Collusion or

¹¹ This disaggregation of corruption follows M. Schacter and A. Shah, 'Look before You Leap: Notes for Corruption Fighters', Policy Brief no. 11 (Ottawa: Institute on Governance, 2001).

bid-rigging is typical of tendering processes in developed and developing countries and involves both international and national actors.¹²

- Corrupt practices also occur between *public officials and users/citizens/consumers*. These practices, known as administrative or petty corruption, enable poor and non-poor households, farmers and other users to get water, get it more quickly or get it more cheaply.

The series of corrupt practices in the sector extends from policy capture, to large and small public–private transactions in construction and operations, to interactions at the point of service delivery, which together can be plotted on a water ‘value chain’. The framework shown in table 1 highlights these three sets of interactions in terms of the functions of the water sector: a cycle of policy-making and regulation, budgeting and planning, financing, programme design and management, tendering and procurement, construction, operation and maintenance, and monitoring and enforcement functions.

Table 1 Value chain framework: corrupt interactions from policy-making to water delivery

	Public–public	Public–private	Public–consumers/civil society
Policy-making and regulation	<ul style="list-style-type: none"> • Policy and regulatory capture over management of water resources, competition and monopolies • Inter-ministerial collusion: cover-up over environmental/social impacts of hydropower projects 	<ul style="list-style-type: none"> • Policy capture over WRM decision-making • Bribery for water rights, extortion for permits and processing of permits • Regulatory capture (e.g. waivers to licences, bypassing EIAs, overlooking social impacts) • Kickbacks to cover up pollution 	<ul style="list-style-type: none"> • Bribery to silence public protest over environmental and social impacts
Planning and budgeting	<ul style="list-style-type: none"> • Distortionary decision-making by politicians (location/type of investments) • Diversion of funds to individuals, other projects inter-ministerial bribery for fund allocation • Corruption in local budget management (fraud, falsification of accounts/documents, village-level collusion) 	<ul style="list-style-type: none"> • Bribery to influence allocation of funding to higher-capital-investment projects (e.g. bulk water supply vs. improving networks or low-cost efficiency solutions) 	

(Continued)

¹² While it is possible that private–private interactions or NGO–private interactions are also prevalent in the sector (e.g. bribery or fraud between contractors and subcontractors), these interactions are defined as corruption only if the firm/organisation has been entrusted with public office.

Table 1 (continued)

	Public–public	Public–private	Public–consumers/civil society
Donor financing, funding and fiscal transfers	<ul style="list-style-type: none"> • Donor–government collusion in negotiations to meet spending targets, progress and quality, to influence type of sector investment • Bribery, rent-seeking and kickbacks to ensure fund transfers between MoF and sector ministries 	<ul style="list-style-type: none"> • Donor and national private operator collusion (outside legal trade agreements) 	
Management and programme design	<ul style="list-style-type: none"> • Corruption in personnel management <ul style="list-style-type: none"> – payments for lucrative positions (e.g. utility directorships, project management posts) – bribes for promotions, transfers, salary perks • Distortionary decision-making (collusion with leaders in selection/ approval of plans, schemes) • Corruption in LG and departmental planning and budget management • Bribery to distort water management and canal construction to benefit officials 	<ul style="list-style-type: none"> • Bribery to shift design to increase potential for kickback and fraud 	<ul style="list-style-type: none"> • Influence project decision-making to benefit some users (project-level site selection, equipment, construction) • Bribery to distort water management, canal construction, sequencing to benefit rich or powerful users
Tendering and procurement	<ul style="list-style-type: none"> • Administrative corruption (fraud, falsification of documents, silence payments) • Inter-department/ agency collusion over corrupt procurement, fraudulent construction • Cover-up and silence payments linked to corrupt procurement • Kickbacks in cash or jobs to help politicians secure preferred contractor 	<ul style="list-style-type: none"> • Bribery/kickbacks to influence contract/bid organisation • Kickbacks to win large-scale projects: to secure contracts, to influence negotiations, for information • Corruption in supply procurement/inflated estimates for capital works, supply of chemicals, vehicles, equipment • Corruption in delegating O&M: awarding contracts, overestimating assets, selection, type, 	

Table 1 (continued)

	Public–public	Public–private	Public–consumers/civil society
		duration of concessions, exclusivity, tariff/subsidy decisions • Fraudulent documentation, uncertified materials in construction	
Construction	• Cover-up and silence payments linked to corrupt construction	• Bribery and fraud in construction – not building to specification, concealing substandard work, unspecified materials, underpayment of workers – failure to complete works, delays • Fraudulent invoicing – marked-up pricing, over-billing by suppliers	• Corruption in community-based construction (with similar types of practices as for public–private interactions)
Operation and maintenance		• Over-billing by suppliers, theft/diversion of inputs (chemicals) • Avoiding compliance with regulations, specifications, health and safety rules • Falsification of accounts • Bribery for diversion of water for commercial irrigation or industry • Bribes to cover up wastewater discharge and pollution	• Administrative corruption for water (access to water – installing/concealing illegal connections, avoiding disconnection, illicit supply, using utility vehicles) • Administrative corruption for speed (or preferential treatment) – irrigation canal repairs, new connections
Payment (for services)		• Bribery for excessive extraction by industry • Bribery, collusion in falsified billing in commercial irrigation and industry	• Administrative corruption – repayment/billing for WSS and irrigation water – fraudulent meter reading, avoidance or partial payment, overcharging

Source: Adapted from J. Plummer and P. Cross, 2007.¹³

13 'EIA' stands for 'environmental impact assessment', 'MoF' for 'Ministry of Finance', 'LG' for 'local government', 'O&M' for 'operation and maintenance' and 'WSS' for 'water supply and sanitation'.

Linkages and legality add to the complexity of any map of corruption in water. These interactions reinforce each other and double the impacts. A legal decision to construct a dam may enable officials to capture resources, private contractors to skim profits and officials to use the power of their office to divert the dam's water to powerful landowners for kickbacks. The accumulative cost of this network of interactions is high, with many losers along the way.

Ultimately, however, corruption scenarios play out very differently in different contexts. Political regimes, legal frameworks, the degree of decentralisation, regional disparities, power relations, cultural norms and levels of accountability (e.g. between state and civil society) will influence the patterns and risks. Understanding the channels where corruption can occur helps in its prevention. Mapping makes it possible to identify 'hot spots', in a particular context, where corruption tends to concentrate along the water value chain.

The impact of corruption: putting billions of lives at stake

The impact of corruption can be described in financial, economic, environmental and socio-political terms, and can also involve issues of security.

Putting an exact *financial* cost on corruption is difficult. While a best-case scenario might suggest that 10 per cent is being siphoned off from the sector annually in corrupt practices, a worst-case scenario places the figure at 30 per cent. If estimates are correct that an additional US\$11.3 billion is needed each year to achieve the MDGs on water and sanitation, a 30 per cent leakage rate would mean that corruption could raise the costs of this pivotal development initiative by more than US\$48 billion over the next decade.¹⁴

Weak governance and endemic corruption exact a *social* impact that financial calculations can never estimate. The barriers to access fall disproportionately on the poor in all regions. Chronically low levels of access are found among poorer households and, accordingly, many households find ways – often creative ways – of obtaining water informally. They vary the sources from which they obtain water and pay higher prices when they can afford it. The poorest households in countries such as El Salvador, Jamaica and Nicaragua spend more than 10 per cent of their income on water while their cohorts in rich nations such as the United States pay only a third as much.¹⁵ In many situations elevated costs can be attributed to the corrupt transactions between informal providers and utility officials.

But poverty is multidimensional and household costs are not all financial. Whether poor households engage in corrupt transactions or not, they suffer due to the inefficiencies that corruption produces. Where corruption removes or increases the costs of access to water effects can be measured in terms of lost days, human development and lives. Close linkages have been found between access to safe water and infant mortality, girls' education and the prevalence of waterborne disease.¹⁶

14 World Health Organisation (WHO) and United Nations Children's Fund (UNICEF), 'Water for Life: Making it Happen' (Geneva: WHO Press, 2005).

15 UNDP, 2006.

16 See articles starting on pages 28 and 40.

It is not only with poverty that water problems are strongly associated. Water is also a key driver of *growth*, being an indispensable input to production (in agriculture, industry, energy and transport). Currently, the extremely low levels of hydraulic infrastructure and limited water resources management capacity in the poorest countries undermine attempts to manage variability in water availability.¹⁷ Water reservoir storage capacity (per capita) in countries such as Morocco or India is less than one-tenth of the volume that Australia has in place.¹⁸ In many countries in Africa, highly variable rainfall and the regular droughts that devastate parts of the region all ripple through national economies. In Ethiopia, for example, the lack of hydraulic infrastructure is estimated to cost the Ethiopian economy over one-third of its growth potential.¹⁹ Reports of the disaster in New Orleans in 2005 suggest that it was not only natural, but exacerbated by unsubstantiated, unaccountable decision-making.²⁰ Corruption reduces the levels of investment in infrastructure, reduces resilience to shocks and undermines growth.

The impact of corruption in water can also be *environmental*. The lack of infrastructure for water management whether man-made (e.g. dams, inter-basin transfers, irrigation, water supply) or natural (e.g. watersheds, lakes, aquifers, wetlands) in developing countries presents a management challenge almost without precedent.²¹ The ever-increasing impact of climate change and the lack of human and financial capacity to manage the water legacy result in far greater shock in developing countries, making the poorest countries ever more vulnerable. Corrupt practices that increase pollution, deplete groundwater and increase salinity are evident in many countries and are closely linked to deforestation and desertification across the globe. Stemming the leakage of funds from the sector is vital to address these issues.

The importance of water – on health, poverty, development and the environment – underscores how it is fundamentally linked to questions of *power and security*. Corruption can turn the control of water into a force that aggravates social tensions, political frictions and regional disputes. Tensions over water are frequent within states. Dire water shortages in Egypt triggered widespread public protest and roadblocks in the summer of 2007. The outcry was fuelled by the perception that corruption had caused the water crisis.²² In Sierra Leone, a director of the Freetown utility was killed in 2007 during a clampdown on firefighters over their illegal resale of water.²³ Inevitably, internal pressures also spill across borders. Over the last fifty years

17 World Bank, 'Managing Water Resources to Maximize Sustainable Growth: A Country Water Resources Assistance Strategy for Ethiopia' (Washington, DC: World Bank, 2006).

18 UNDP, 2006.

19 UNDP, 2006. Ethiopia is ranked 138 out of 180 countries, based on the TI Corruption Perceptions Index.

20 See article starting on page 28.

21 D. Grey and C. Sadoff, 'Water for Growth and Development: A Framework for Analysis', baseline document for the fourth World Water Forum (Washington, DC: World Bank, 2006).

22 *Al-Ahram* (Egypt), 12 July 2007; *Al-Ahram* (Egypt), 2 August 2007; Land Center for Human Rights, 'Water Problems in the Egyptian Countryside: Between Corruption and Lack of Planning', Land & Farmer Series no. 32 (Cairo: Land Center for Human Rights, 2005).

23 Live from Freetown [blog], 2 June 2007, available at www.livefromfreetown.com/2007/06/.

water has been the source of twenty-five international conflicts, such as communal clashes at the Mali–Mauritania border over access to watering holes in 1999.²⁴ The potential for future disputes is ever present. Water basins that span more than fifty countries on five continents have been identified as hotbeds of conflict.²⁵ Corruption, particularly grand corruption, is a potential trigger to ignite these latent tensions.

The drivers of corruption

The equation *Corruption = Monopoly + Discretion – Accountability*, developed by Robert Klitgaard,²⁶ is very useful and relevant for understanding the problems posed for the water sector. It highlights the aggregate effect of monopoly and discretionary power, which are common in water institutions.²⁷ The water and sanitation sub-sector tends to be highly monopolistic and has many traits such as high capital costs and economies of scale²⁸ that help to keep it that way. In hydropower, the need for many tailored, non-standard investments serves as a barrier for new entrants to the market and reduces levels of competition. In addition, agencies and officials involved in all different aspects of the water sector have historically seen enormous discretionary power in the planning, design, contracting and implementation of water projects. Their influence is difficult to address because the sector is highly technical and the professionals involved have a clear information advantage.

Other idiosyncrasies of the water sector also suggest a high potential for corruption. Water investment involves a large flow of mostly public money, often with inadequate planning and oversight. In developing countries, funding sources for projects are often uncoordinated and spending and decision-making are non-transparent. And the sector is a costly one – water services assets, for instance, can be three to four times higher than telecommunications and power.²⁹ Because water policy, planning and budgeting decisions impact on inputs vital for agriculture, industry and property, political interference is significant. The result is a game of winners and losers who often adopt alternative means to gain access to water.

The funding provided by donors to the sector through official development assistance (ODA) creates additional opportunities for corruption to occur. Financing to the water supply and sanitation sector reached almost US\$6 billion in 2005.³⁰ While this represents roughly 5 per cent of all aid flows, secondary spending leads to a multiplier effect for the money coming into the sector. The flows are particularly vulnerable to corruption, high levels of manipula-

24 See International Water Event Database, www.transboundarywaters.orst.edu/data/.

25 S. Postel and A. Wolf, 'Dehydrating Conflict', *Foreign Policy*, no. 126 (2001).

26 R. Klitgaard, *Controlling Corruption* (Berkeley, CA: University of California Press, 1988).

27 A number of anti-corruption advocates including Klitgaard and Susan Rose-Ackerman identify four key factors that engender opportunities for corruption: monopoly power, wide discretion, weak accountability and lack of transparency.

28 A reduction in unit cost achieved by increasing the amount of production.

29 C. Kirkpatrick *et al.*, 'State versus Private Sector Provision of Water Services in Africa: A Statistical, DEA, and Stochastic Cost Frontier Analysis', Paper no. 70 (Manchester: University of Manchester, 2004).

30 See Organisation for Economic Co-operation and Development (OECD), Official Development Statistics Database.

tion and patronage can occur and donors are often under pressure to disburse – be it grant money or loans.

In water and sanitation services it is also the failure of monopolistic state delivery that creates opportunities for petty corruption. A multitude of small-scale providers fill the gap in provision, often functioning in an informal zone that makes them and their clients vulnerable to exploitation. Government institutions are not well structured to deal with these informal water providers or the forms of bribery that develop.³¹ Another driver of corruption in the water sector is related to the fact that the demand for accountability is very limited in developing countries. This is particularly true in relation to the service provider/consumer accountability relationship.³² When civil society is weak and the concept of customer rights undeveloped, the challenge is multiplied.

The existence of state and non-state actors, systems, service levels and institutions creates a highly complex sector. Responsibilities for water affairs can be found in a multitude of different ministries and agencies and at various levels of government. The lack of clarity in the roles and responsibilities of all these stakeholders results in a lack of transparency and accountability and, inevitably, in a severe asymmetry of information between user, provider and policy-maker. The diversity of arrangements for delivering water services adds to the challenge. Utilities, alternative providers, community management and self-supply, whether formal or informal, all exist side by side in the context of different government structures and institutional challenges. These unique characteristics make water a fertile sector for corruption.

In addition, water has many linkages to other sectors that are particularly vulnerable to corruption. As part of the high-risk construction sector,³³ water displays the resource allocation and procurement-related abuses which arise when the public and private sectors meet. As water services and resource management is one of the functions of a country's administrative or civil service, the sector also confronts a different set of obstacles: low capacity, low wages, lack of clear rules and regulations, and dysfunctional institutions. These conditions make it susceptible to the common practices of fraud, bribery, embezzlement and favouritism.

Addressing incentives for change

Preventing corruption from taking root is less costly and complicated than having to tackle the problems once they begin. Effective prevention involves identifying and understanding the incentives at play. Corruption can be driven by need, greed, the opportunity for money or power³⁴ – or simply the basic need for water.

31 See article starting on page 40.

32 C. W. Gray and D. Kaufmann, 'Corruption and Development', *Finance and Development*, vol. 35, no. 1 (1998).

33 See Transparency International, *Global Corruption Report 2005* (London: Pluto Press, 2005).

34 R. Klitgaard *et al.*, *Corrupt Cities: A Practical Guide to Cure and Prevention* (Oakland, CA: Institute for Contemporary Studies, 2000).

Understanding the incentives of individuals, communities and firms requires careful analysis and knowledge of the local context. Incentives are influenced by a range of interconnected factors: social, political, economic and institutional. As corrupt activities unfold, stakeholders are pulled into a complicated web that connects various institutional levels and involves one or more types of corruption. Powerful patronage networks and patron–client relationships shape and solidify these interactions, making the fight against corruption exceptionally difficult. The corruption risk map (see page 7) provides a framework for identifying these stakeholder incentives, potential conflicts of interests and the points along the water value chain that are most vulnerable to capture.

Irrespective of the actors involved, corruption flourishes whenever the short-term benefits outweigh the expected losses. The calculation of costs and benefits will depend on the risk of getting caught and being held accountable. A key element of any sustainable anti-corruption strategy is to change these trade-offs so that stakeholders are no longer motivated towards corrupt behaviour – whether for national policy-makers allocating sector funding or the actors (politicians, managers and community leaders) involved in a community irrigation project. Shifting incentives involves minimising the frequency of transactions, reducing the potential gain from each one, raising the probability of detection and increasing the magnitude of penalties.³⁵

Incentives need careful diagnosis in each setting. The corruption map can be used to identify the incentives of all actors along the value chain but these are highly context-specific. The incentive structures for officials managing utilities in Russia, for instance, are very different from those affecting the operation of irrigation channels in remote areas of Pakistan, or from the logic that determines how international contractors, financiers or policy-makers in industrialised countries respond to corruption risks. This demands knowledge of local settings, particularly of social and institutional norms, and engaging local actors is key.

The chapters that follow provide illustrations of how these incentives make water and corruption such a destructive partnership. Each chapter examines one dimension of the sector and profiles the specific corruption risks, their impacts and the possible policies and instruments to tackle them. Although interlinked, the sub-sectors come with their own particular characteristics, stakeholders, governance challenges and corruption risks. Analysing them individually permits a better comprehension of the challenges each confronts and a broader vision of the obstacles the sector faces.

Chapter 2 focuses on water resources management and outlines the fundamental concerns for the sector. It examines how corruption affects the basic parameters of water availability, sustainability and allocation between different uses and users. It addresses the role of corruption in water shortages, water pollution and inequitable distribution.

Chapter 3 considers the problem of corruption in water supply, the water that people need to live. It describes how corruption affects the way people, particularly the poor, access and pay

35 J. Huther and A. Shah, 'Anti-corruption Policies and Programs: A Framework for Evaluation', Working Paper no. 2501 (Washington, DC: World Bank, 2000).

for adequate and safe water services. It also analyses how corruption risks differ between industrialised and developing countries, and between public and private providers.

Chapter 4 provides key insights into the impact of corruption on food security and agriculture. Agricultural production accounts for one the largest uses of water around the world. Irrigation processes – both sophisticated and simple – feed water to the fields of large-scale and small farmers alike. When corruption is present, food security, poverty reduction and equity are compromised, allocations are distorted and limited water resources are often captured by commercial agriculture producers at the expense of small farmers.

Chapter 5 covers another dimension of the sector: water for energy use. It describes how corruption in hydroelectric power comes with a unique set of characteristics that reflect the size of projects and funding. To turn water into power, dams must be built, and, inevitably, individuals, communities and the environment are subject to involuntary change.

Chapter 6 provides a summary of the policy lessons highlighted in the report. It illustrates how accountability can be created and anti-corruption reforms established. Recommendations draw on the experiences profiled in the report and selected best practices from the sector. By looking at how each actor can make a difference, the chapter sets forth approaches for discussion and future action.

This *Global Corruption Report*, focused on water, aims to provide information on the practicalities of corruption and anti-corruption activity in a sector that is critical for people, food, energy and the environment. The first step in the process of tackling the many and varied forms of corruption in water, however, is to improve our understanding of it. Much more effort is needed to develop knowledge about the nature and scope of corruption in the water sector, and to improve knowledge and awareness of its impact. Change will not come about without first establishing the demand for action. This report is an important step forward in building the commitment that is so urgently needed to fight against ‘corrupt water’.

Corruption in water – a matter of life and death

Charles Kenny¹

Everyone needs water to live. Yet many households in the developing world are without access to piped water – either because they are outside the reach of networks, or the systems have fallen into collapse. Maintaining and building water supply systems are the clear responses. But, even when hard-to-find funding is made available, corruption exerts a tax that distorts allocation decisions, wastes resources and, ultimately, takes lives.

A survey of corruption in water provision in South Asia suggests that contractors have frequently paid bribes to win contracts, in addition to the petty corruption that occurs at the point of service delivery. The study, which was done between 2001 and 2002, shows that the cost to companies and the sector represents a sizable burden and loss of resources when the bill is finally tabulated. Bribes on average ranged from 1 to 6 per cent of the contract values. Kickbacks paid during construction escalated the costs to companies by up to another 11 per cent of the contract value. The formation of ‘sanctioned’ cartels added to the problem of inflated costs, since they helped to push prices 15 to 20 per cent higher than what the market would have demanded. What is worse, these payments actually facilitated companies’ failure to meet contract obligations. Kickbacks tended to cover low-quality work and the non-delivery of goods. Materials worth between 3 and 5 per cent of the contract value were never supplied.² The economic cost of each dollar of missing materials can be calculated at US\$3 to 4 as a result of the water network’s shorter life and limited capacity. These costs add up to another 20 per cent on top of already inflated contract prices. This double impact of corruption in the construction of water networks may raise the price of access by 25 to 45 per cent.

What is the economic and social cost of this corruption? An analysis of household survey data for forty-three developing countries suggests a strong correlation between access to water and child mortality. For each additional percentage point of household access, there was a reduction in the under-five mortality rate: a decline of one death for every 2,000 children born.³

Comparative country work suggests that the cost for a household water connection is around US\$400.⁴ Taking the high-end estimate for the cost of corruption in water provision,

1 Charles Kenny is a senior economist at the World Bank, Washington, DC. The opinions expressed are those of the author and do not necessarily reflect those of the World Bank, its executive directors or the countries that they represent.

2 J. Davis, ‘Corruption in Public Service Delivery: Experience from South Asia’s Water and Sanitation Sector’, *World Development*, vol. 32, no. 1 (2004).

3 D. Leipziger *et al.*, ‘Achieving the Millennium Development Goals: The Role of Infrastructure’, Policy Research Working Paper no. 3163 (Washington, DC: World Bank, 2003). It is worth noting that this estimate is open to dispute: see M. Ravallion, ‘Achieving Child-Health-Related Millennium Development Goals: The Role of Infrastructure – A Comment’, *World Development*, vol. 35, no. 5 (2007).

4 M. Fay and T. Yepes, ‘Investing in Infrastructure: What is Needed from 2000 to 2010’, Policy Research Working Paper no. 3102 (Washington, DC: World Bank, 2003).

the price for households would increase by 45 per cent to US\$580. As this case demonstrates, the failure to combat corruption results in fewer households being connected, tempered progress on lowering child mortality and increased challenges for achieving the Millennium Development Goals related to water, health and poverty.

Taking the estimate of connection costs being US\$400 per household, an investment of US\$1 million in piped water projects in countries with under-serviced water needs would benefit 2,500 families and might save nineteen children per year.⁵ Having access to water would have other positive impacts, such as on household health, education, women's empowerment and poverty. Yet the costs imposed by corruption over twenty years would mean that from the same investment nearly 30 per cent fewer households would gain access, perhaps 113 fewer children would survive and the related development affects would be undermined.

One recent estimate to assess investment costs based on past trends indicates that low-income countries would have to invest US\$29 billion in water projects to meet user demand over the decade ending in 2010.⁶ The impacts of corruption would inevitably create leakages and lost resources, undermining the effectiveness of such investment. Assuming a context of low corruption, each year the global toll of child deaths could be 540,000 lower thanks to a decade's investment in water access. A high-corruption environment would save 30 per cent fewer lives.

This is only a partial estimate. As signalled, the impacts of corruption on household access to water go beyond increased childhood mortality. Access affects illness and death among older children and adults as well. Less water and more illness means missed days at school and work. The pass-through effects of reduced water access leave lasting marks on household educational outcomes and income generation. Other household members have to take time away from economically productive activities to care for sick family members. When there is no household access, considerably more time is spent collecting water from elsewhere. Women and children often bear these responsibilities and are forced to make trade-offs between education and other activities.⁷ Weak governance and high levels of corruption combine in different forms that affect households and undermine their livelihoods through multiple channels. Yet the most startling impact remains the cost they exert in matters of life and death.

5 Based on an average household size of five people and a crude birth rate of thirty per 1,000 people (the average for low-income countries). The exact estimates are 18.75 and 12.93 deaths averted, respectively. The calculation for the low-cost case is as follows: each US\$1 million invested connects 2,500 ($\text{US\$1,000,000}/\text{US\$400}$) households containing 12,500 people ($2,500 \times 5$). These households give birth to 375 children each year ($0.03 \times 12,500$). For these households, coverage increased from 0 to 100 per cent, resulting in 100 fewer child deaths per 2,000 children born. This suggests each US\$1 million can save an average of 18.75 children per year ($375 \times 100/2000$).

6 M. Fay and T. Yepes, 2003. The cost estimates are for the period from 2000 to 2010 in order to increase and adequately maintain water infrastructure networks. It is not based on the infrastructure needed for MDG achievement.

7 See article starting on page 40.