



# Water Integrity Brief

Providing a concise overview of specific themes related to water integrity

Water for food

## Why water integrity matters for food security

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### BACKGROUND

This paper highlights how corruption issues in the water sector form a threat to global food security. It provides an overview of corruption risks affecting the food production chain, and summarises best approaches and concrete measures to increase water integrity for food security. The paper serves as background information for the seminar *Promoting Integrity and Transparency in Water for Food* at the Stockholm World Water Week 2012, jointly organised by the Water Integrity Network (WIN), the UN Development Programme Water Governance Facility (WGF) and Transparency International (TI).

### 1. HOW DO WATER AND FOOD CONNECT?

In a fast-developing and urbanising world that also faces climate change, the demands on water, food and energy are increasingly competing. This growing competition makes our natural resources scarcer and more valuable, which in turn increases corrupt practices. Under these circumstances, it is essential that governance mechanisms to secure clean and sufficient water for the production of safe, healthy food are efficient and transparent. Unfortunately, such mechanisms are often not in place or are distorted by corruption (the abuse of entrusted power for private gain<sup>1</sup>). Corruption excludes poor farmers from irrigation systems; it increases the risks of drought resulting in disaster, and permits the depletion and pollution of groundwater resources (Harmer et al 2010,

<sup>1</sup> Official definition of corruption by Transparency International.

“Welcome to the new geopolitics of food scarcity. The world is in serious trouble on the food front. But there is little evidence that political leaders have yet grasped the magnitude of what is happening. Unless we move quickly to adopt new population, energy and water policies, the goal of eradicating hunger will remain just that.”

Lester R. Brown, 2012, *The Guardian*

Rijsberman 2008, Rinaudo 2008). To grasp fully the causes and consequences of low integrity levels in the water sector, we need to be aware of the water-food-energy nexus and understand the connections between the different interests in each.

At present more than two thirds of global freshwater withdrawal is used for agriculture and biofuels (FAO 2011). In most river basins, the capacity to tap additional water is limited (Molle et al 2007). At the same time, it is estimated that global food demand will double by 2030 as result of a continuously growing population and dietary changes, particularly in India and China (UN 2012). Combined with a shift from fossil fuels to biofuels and an increase in energy demand, this puts additional pressure on the allocation of our limited freshwater resources. It has been estimated that 75 per cent of the increase in food prices from 2002–08 was due to competing demands on land and water resources for biofuel production (Mitchell 2008).

Incidents of water pollution are also increasingly common, and the lack of integrity in pollution control is another major concern. This has a direct



Rural children cool off at a newly installed shallow in Murshidabad, West Bengal, India.  
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impact on nutrition and health, through the supply of potable water and the use of water for irrigation and fisheries. Meanwhile, uncontrolled use of pesticides and fertilisers, poor soil management, biological contamination from livestock farming and waste discharge from cities and industries are deteriorating the water quality.

The new trend of leasing land in poorer countries by both public and private sector because of an unclear and non-transparent environment (Mehta et al, 2012) has negative implications, especially for poor communities who are unaware of the terms of the lease agreements. Land grabbing can raise land prices and therefore food prices, and causes the displacement of poor populations. These displacements can in turn worsen deforestation and the depletion of water ecosystems by extending the agricultural frontier. Displaced populations also migrate into overpopulated cities, increasing the demand for water, food and energy. Climate change mitigation strategies, that involves creating carbon sinks, along with industrial demand for natural resources (Borras et al 2012), place further pressure on land and water.

## 2. WATER INTEGRITY ISSUES AFFECTING FOOD

Various authoritative reports have recently drawn attention to the fact that water management challenges are aggravated by corruption and a lack of transparency (TI 2008, Vos 2008a, and Stålgren 2006). As an illustration, according to World Bank estimates, construction costs for water infrastructure are inflated

by 20 to 40 per cent due to corruption (Stålgren 2006). Problems related to a lack of water integrity interfere with different activities along the food production chain, from the planning of land and water use to the production and distribution of food. Prevalent integrity issues at some of the points where water and food interlink are discussed below.

### 2.1. Water allocation

Allocation and trade-offs between different water uses such as agriculture, industry, the environment and cities are a notable source of contention. The allocation of water at the nexus between the authorities and water users can lead to conflict. In India, the allocation by the authorities of groundwater to a beverage company without taking the local people into confidence led to major conflict when over-extraction of groundwater by the company affected farmers' water supply. Local communities protested and sued the company, which was fined US \$48 million for depleting local groundwater resources (Ajayan et al 2010). Coordination between different stakeholders and transparent allocation agreements are necessary to prevent such conflict (see [box 1](#)).

#### BOX 1 Water Futures Partnership for conflict mitigation

In recent years 'Water Futures Partnerships' have been established in various countries by developing a strategic alliance between Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, acting on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany, SABMiller beer company and the World Wide Fund for Nature (WWF). The partnership was initiated in four focus countries - South Africa, Tanzania, Ukraine and Peru. The project provides a multi-stakeholder platform bringing together public, private and civil society actors. Before the stakeholder dialogue, an assessment of the local water risks and a brewery's water footprint is carried out. Based on this, the partnership aims to work with all stakeholders to find solutions to mitigate conflicting water use (Water Futures Partnership 2011).

## 2.2. Watersheds and river basins

Watersheds and river basins host a range of activities that vie for limited water resources. In response, the principles of Integrated Water Resources Management (IWRM) are being promoted by various governments with support from international donors promoted to overcome management challenges in river basins. Although IWRM increases levels of coordination at the watershed level, it also introduces new complexity. Research suggests that corruption risks increase with cross-sectorial cooperation, because levels of social control and administrative monitoring fall when interactions occur outside the established system (Butterworth 2008). In order to regulate different water uses, measures such as the strengthening of formal water rights, cost recovery and water pricing, the creation of new basin institutions and consideration of environmental impacts are being implemented in river basins worldwide. All these measures fall within IWRM (Van Koppen et al 2007), which must address integrity principles in order to ensure their success (see [box 2](#)).

## 2.3. Irrigation management

Improved access to irrigation through dams and canal infrastructure is crucial for food security and to help improve rural livelihoods. With access to irrigation water, farmers can reduce their vulnerability to droughts, increase crop production and ensure food supply (Hussain 2003). In reality, a farmer's access to irrigation water is often limited by challenges which are not of an infrastructural nature, but of a socio-political one.

### **BOX 2 Water user's federation in Ecuador**

Water users in the Ecuadorian Andes have joined together to make decisions and prevent corruption in the allocation of irrigation subsidies and water to grow crops. With support from non-governmental organisations (NGOs), development agencies and researchers, users have become a powerful grassroots-based actor in water governance. These external parties brought the water users together to inform and mobilise them. The empowered federation of provincial water users successfully filed complaints on corruption, ethnic discrimination and bribery; and defended local rights to water use against provincial government institutions (Hoogesteger, J. 2012).

Fraud and nepotism during infrastructure planning and tendering processes can lead to project delay and poor construction, as illustrated by a critical study on two small dam projects in Ghana (Venot et al 2011). Moreover, the allocation of subsidies and donor funds for irrigation frequently takes place over the heads of poor farm communities. In Mexico 70 per cent of irrigation subsidies are benefiting only 20 per cent of farmers, who tend to be the largest (UNDP 2006). Similarly, cases of water licensing from Chile and Kazakhstan show the advantage enjoyed by influential large-scale farmers over smaller ones (Warner et al 2009). Corrupt practices disrupt actual water distribution. A well-known study by Robert Wade (1983) – unique in its detail – exposes the extent of corruption in Indian canal irrigation systems. He calculated that assistant engineers could make US \$10,000 annually in bribes from farmers, in return for water. A more recent study on canal irrigation systems in Peru confirms that bribing continues to be a persistent phenomenon (Vos 2008b).

## 2.4. Groundwater management

Over the last few decades, motor pumps have provided easy access to groundwater, enabling many rural households to increase their crop yields and income. This is especially so in Asia, which has 75 per cent of the global area irrigated by groundwater, but the pattern is also expected to spread in other regions, such as Sub-Saharan Africa (Shah et al 2007). In informal groundwater markets, private tube-well owners over-exploit the resource, manipulate water prices or exclude marginalised farmers (Prakash 2005). The biggest threat to groundwater irrigation is weak governance mechanisms. These mechanisms are needed to regulate over-exploitation, in order to protect the environment and people's livelihoods (Rijsberman 2008). Attempts to restrict groundwater use through permit systems have frequently failed, due to a lack of political accountability and reliable monitoring. In India, local politicians try to win votes by advocating against groundwater restriction policies and subsidising free electricity instead (Badiani and Jessoe 2010). Examples from Mexico show that the enforcement of restrictions is hampered by circumvention of registration and falsification of documents (Kemper 2007, World Bank 2010). There are efforts to improve groundwater governance (see [box 3](#)).

### **BOX 3 Farmer-managed groundwater in India**

In the Indian state of Andhra Pradesh, a successful, participatory approach to addressing the over-exploitation of groundwater has been piloted. Regulation of groundwater use by private tube-well owners failed repeatedly due to a lack of accountability and transparency. In response, the pilot project took a different approach from relying on local politicians' willingness to implement restriction policies. Instead, it engaged farmers in data collection and analysis to improve their understanding of groundwater dynamics and ensure collective decision-making. With their newly acquired knowledge, large numbers of farmers adopted a set of farming strategies which allow them to increase yield while pumping less (World Bank 2010).

### **2.5. Land and water grabbing**

Competition between local farmers and commercial food producers or fuel farms supplying big industry is well-documented. The issue is now taking on a new dimension with demographic and urban pressures on resources, and the development of new hubs of global capital. This sharpens the race for resources in order to secure food and energy. Land leasing by both the public and private sector is meant to be reserved for marginal or unproductive lands, yet in fact the land is often associated with water services or irrigation facilities (Mehta et al 2012). Given that many land leases and contracts do not include a water agreement, 'growing evidence suggests that in many cases, land grabbing may be motivated by the desire to capture water resources' (Smaller and Mann 2009). As an example, depletion of fossil freshwater reserves is causing Saudi Arabia to lease land in other countries for wheat production – most notably, through major investments in Ethiopia. It is estimated that 3.6 million hectares are currently cultivated in Ethiopia by foreigners, including the Saudis (Mousseau and Sosnoff 2011), leading to an additional 49.5 billion cubic metres of water consumption (Bossio et al 2012).

### **2.6. Urban food demand**

The world's urban population is increasing by 60 million people per year (UN-Habitat 2010).

Simultaneously, dietary habits in emerging economies are changing rapidly. The water footprint of Indian and Chinese citizens increases from about 1,000 to 3,000 cubic metres per person per year when they start eating as much meat and dairy produce as the average US citizen (Mekonnen and Hoekstra 2011). These developments increase the pressure on food availability in cities and give rise to the need to promote urban agriculture – but this is threatened by limited access to clean water. Corruption in water supply and sanitation institutions is recognised as a major challenge limiting clean urban water supply (WIN 2011).

### **2.7. Food aid and distribution systems**

Beyond food production, a lack of integrity is even evident in the distribution system. The poorest people suffer from food scarcity, especially in humanitarian disasters. The response mechanisms for delivering food aid in emergencies are particularly sensitive to corruption, due to the ad-hoc nature of organising food transport and distribution. The global food crisis of 2008 (when commodity prices rose dramatically) has shown that the urban and rural poor are particularly sensitive to disturbances in food supply (Ruel et al 2010). Transparency International (TI) Kenya carried out an integrity study on Kenya's food assistance response in 2011 after a severe drought (Harmer et al 2012). It found that food distribution is politicised, with political leaders, local elites and local relief committees influencing who received assistance. In one of the drought-prone regions, it was estimated that 30 per cent of distributed drinking water failed to reach targeted beneficiaries. The study concludes that disaster relief organised by the government largely failed because monitoring and coordination between different administrative layers were absent.

## **3. HOW TO ACHIEVE WATER INTEGRITY FOR FOOD SECURITY – THE ROLE OF DIFFERENT STAKEHOLDERS**

To achieve efficient management of our water resources for food and energy, there is a clear need for more coherent policies, coordination between the different sectors and participation of all stakeholders in decision-making. The principles of good governance, such as transparency, accountability and participation, should guide the way towards an equitable and reliable use

#### **BOX 4 Integrity principles as guidelines for water management and food security**

##### **Transparency**

Public decision-making processes must be open, and information about the process must be communicated to those who will be affected.

- » Transparent tendering for construction contracts for infrastructure projects in irrigation or hydropower development
- » Transparent negotiating of land and water rights with investors
- » Transparent impact assessments for land planning and infrastructure investment, including long-term environmental impacts

##### **Accountability**

Government agencies or private entities that are responsible for the public good must answer for their actions and refrain from abuse of power

- » Assurance of equitable water distribution to grow food
- » Control of water quality and health standards
- » Social audits of public governance for irrigation or food aid
- » Responsibility for contracts, conflicts and payments of common resources ('polluter-pays' principle, river contracts and agreements between upstream and downstream users)

##### **Participation**

Those who have a stake in upcoming decisions must have the opportunity to be involved in and influence the decision-making process

- » Involving water users in decisions on water distribution
- » Decentralisation and disaggregation of power in water resources management (including watershed management, irrigation, etc.)
- » Involving holders of land and water rights in selling or renting land
- » Involving consumers in the distribution of food aid

of water for improved access to safe food (see [box 4](#)). Governments, private actors and civil society have different roles and responsibilities in this process.

#### **3.1. Coordination and regulation by public authorities**

Public institutions should work together with the private sector and civil society, sharing information in a transparent manner. They should be accountable for decisions and play a pivotal role in avoiding or resolving conflicts. However, even in the context of increased participation by private actors and civil society, public authorities still have the important responsibility of creating an enabling environment which includes clear rules, law enforcement and political stability. To improve the accountability of integrated management, governments can use innovative tools, such as WMTI and MASSCOTE (see [boxes 5 and 6](#)), and approaches, such as Payment for Environmental Services, the 'polluter-pays' principle (see [box 7](#)), which have been introduced in many places globally with positive outcomes.

#### **3.2. Community empowerment and capacity development**

Either as food producers or as food consumers, local communities should use their collective power to engage actively in the politics of water management and food security. The media, NGOs and researchers have a vital role to play in this process, primarily as information providers and watchdogs. Informal education and local coalition building foster communities' responsibility for their resources. This ultimately empowers them to improve water governance and force public institutions to upgrade services and increase transparency. The use

#### **BOX 5 WMTI-web based indicators for water agencies**

The Water Management Transparency Index (WMTI) developed by TI Spain consists of a set of 80 indicators that assesses the transparency of water agencies through analysis of the content of their web pages. The indicators target information requirements judged to be important for transparency. The tool has been used by water agencies in Spain, where each agency managing a river basin district has web pages giving citizens access to information regarding water resource management in that basin (WIN CIS Spain, 2012).

of capacity-development tools can raise awareness about water integrity issues and helps map the problems and find creative local solutions. Enhanced research, local data collection and sharing case studies of good practice are also important for empowering local communities.

### 3.3. A supportive private sector

Governments are promoting numerous partnerships with the private sector for better management of land and water resources, especially for food security. These include the 'Water Stewardship Initiative' and the 'Water Future Partnership' (BMZ 2012). The private sector's growing role in water management and investment requires it to take a clear stand against corruption. As private actors seek primarily to maximise their own profit, they may be intrinsically motivated to fight corruption when it increases their costs (Moss 2008). However, to assure that its anti-corruption activities benefit communities, the private sector needs an enabling environment that brings clear rules and oversight, incentives and audits. By adhering to codes of conduct or signing collective agreements such as integrity pacts (committing all parties to honest behaviour during a contract bidding process), private entities can increase their integrity levels. Private water supply companies in Mombasa, Kenya, set a good example by signing a 'Water Improvement Act' with communities to reduce mutual distrust and improve service provision (WIN 2012).

#### **BOX 6 MASSCOTE – a step-by-step methodology to modernise irrigation management**

Mapping System and Services for Canal Operation Techniques (MASSCOTE) is a step-by-step assessment tool developed by the FAO to engage stakeholders in modernising the management of canal irrigation systems. It is designed to be implemented by researchers and government engineers. The first step consists of a rapid appraisal procedure to benchmark the system's performance. By benchmarking norms and standards, future improvements can be measured through systematic comparison with the past. Further steps include mapping of costs and operations against services. This methodology is useful in detecting inadequate cost recovery and in planning modernisation and more service-oriented management. It has been used for medium- to large-scale irrigation systems in Asia, Latin America and North-Africa (Renault, Facon and Wahaj 2007).

## CONCLUSION

The lack of integrity in water regulation, management and distribution, and at different institutional levels, can be highly detrimental to food security. Transparency, accountability and participatory processes – with checks and balances to counter corruption and nepotism – are particularly crucial to enable efficient management of water resources to secure food for everyone.

#### **BOX 7 Promising but challenging approaches: Payment for Environmental Services (PES) and the Polluter-Pays Principle**

PES aims to reward a community or land users for the environmental services they provide by protecting or restoring an important ecosystem, e.g. improved farming practices for sustainable watershed management. Measuring the real impact of PES is difficult, and corruption risks exist. PES requires support from public authorities, who need to define and enforce rules (Pirard and Billé, 2011). Experience in Cidanau, Indonesia, shows that a transparent and participative negotiation process helped in the successful implementation of the project, with a forum that had clear terms of reference providing an intermediary between the water company and the farming communities (RUPES 2010).

Non-financial incentives, such as Rewards for Environmental Services (FAO 2011, Pirard and Billé 2011), can also ensure benefits to wider society regardless of who owns the land. These also reinforce community coalitions and negotiating power. An example is the Government Community Forestry Program in Sumatra, Indonesia, which gives farmers conditional land tenure in exchange for sustainable farming practices and protection of the remaining natural forest (RUPES 2010).

The polluter-pays principle (PPP) is an environmental policy principle which requires that the costs of pollution, including its prevention and control, be borne by those who cause it. Water quality in Lake Nakuru of Kenya suffered due to deforestation, industrial and domestic waste, and urbanisation. The uncontrolled discharge of waste was overlooked and corruption was rampant. This forced the government to implement polluter-pays measures targeting both private and public sector polluters (Wachu Gichuhi 2008).

For a detailed list of references that this paper is based on, please contact us or refer to our website.