



UNEP **Finance Initiative**  
Innovative financing for sustainability



# Financing Water: Risks and Opportunities

## **An Issues Paper**

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The United Nations Environment Programme Finance Initiative (UNEP FI) and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (UNEP GPA)

“Water as an asset is being mainstreamed within financial services. Better management of water risks and a sharper feel for new water markets is emerging”

Paul Clements-Hunt, Head of UNEP Finance Initiative

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Abbreviations:

- SVPS** Special Purpose Vehicles
- MFIs** Multilateral Financial Institutions
- CSR** Corporate Social Responsibility
- ESG** Environmental, Social and Governance Issues
- IFC** International Finance Corporation
- UNEP FI** United Nations Environment Programme Finance Initiative
- PSP** Private Sector Participation
- EBRD** European Bank for Reconstruction and Development
- EIB** European Investment Bank

Box 1. Mini Glossary:

<b>Basel II</b>	Code drafted by the Basel Committee on Banking Supervision of the Bank for International Settlements stipulating the amount of capital cover banks should keep as backing for loans of various degrees of riskiness.
<b>Bond</b>	Certificate issued by a government or public company promising to repay borrowed money at a fixed rate of interest at a specified time <sup>1</sup> .
<b>Corporate finance</b>	Finance secured against the assets or balance sheet of the company raising the finance, rather than the specific project to be funded.
<b>Direct investment</b>	Situation in which an investor holds 10% or more of the ordinary shares or voting power of a company.
<b>Mezzanine finance</b>	Unsecured, higher yielding loans, subordinate to bank loans and secured loans but ranking above equity.
<b>Non-recourse finance</b>	A form of project finance in which the lenders look solely to the cash flow of a project to repay debt service.
<b>Portfolio investment</b>	Situation in which the investor holds less than 10% of the ordinary shares or voting power of a company.
<b>Project finance</b>	Same as non-recourse finance.
<b>Syndication</b>	A group of financial institutions combining to finance a project. A successful syndication is announced with a <b>Tombstone</b> notice listing the lead bank and participants. The Lead Bank may be an international development bank such as IFC, using a system of A and B Loans, the latter having Preferred Creditor Status with the same degree of comfort as a loan from the Lead Bank.
<b>Venture capital</b>	Capital invested in a project in which there is a substantial element of risk, typically a new or expanding business.

Sources: The New Oxford Dictionary of English; and International Finance Corporation, Project finance in developing countries, 1999

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## 1. Introduction and Outline of Contents

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This report is concerned with the major water-related risks (WrRs) incurred by banks and other financial institutions. Some of these risks are common to all types of business, others are specific to water or arise with particular force in this sector. This paper will focus on the latter categories.

WrRs are of several kinds:

- Commercial (e.g. tariff, cash flow profile, credit risk);
- political (expropriation, political interference, devaluation);
- legal, regulatory and contractual (law and contract enforcement, regulation);
- water resource risks (scarcity, flooding, pollution, reallocation);
- reputational (compliance with good practice, corruption, stakeholder activism).

Market conditions and competitive pressures are pushing banks further up the risk spectrum. Banks are exposed to WrRs mainly through the status and activities of their clients. However, banks can become more directly involved, when they are owners or major shareholders in businesses with important WrRs, and when loans turn problematic and require intervention.

Banks have various choices for managing WrRs: through portfolio selection; by influencing their clients; or by dealing directly with risks on their own account. Failure to manage WrRs well exposes banks to reputational risk.

Banks encounter different sets of WrRs depending on the business segment with which they engage. This report breaks businesses down into four principal types from the viewpoint of WrRs:

- Water infrastructure and services (utilities and operating companies, dams and other hydraulic structures);
- suppliers to the water sector (producers of pumps, pipes, desalination units, etc);
- water-intensive businesses (e.g. brewing, steel, food processing, irrigated farming);
- all other firms and banks (all businesses with a water footprint or a water trail, under growing public scrutiny to account for water use and needing to manage reputational risk).

Matrix 1 summarises the sets of WrRs corresponding to each of these business groups.

The paper concludes with some suggestions for banks to raise their awareness of WrRs, and assess and manage these risks more systematically.



Matrix 1: A checklist of water-related risks

Water-related risks	Utilities and infrastructure (inc. dams)	Suppliers	Water-intensive sectors	All firms and banks
<b>Commercial:</b> Tariff affordability and resistance Project cash flow profile Credit risk Contractual risk Performance risk Demand and markets Inappropriate technology Information gaps/hidden costs Costs of energy and other inputs	 x x x x x x x x x	   x x x x x x		
<b>Political</b> Expropriation Political interference New standards and directives Sub-sovereign agencies Local stakeholder actions Devaluation	 x x x x x x	  x  x  		     x
<b>Regulatory, legal and contractual</b> Weak or arbitrary regulator Weak legal framework Contract enforcement Basel II capital risk coverage	 x x x			    x
<b>Water resource issues:</b> Scarcity and cost Reliability Quality Pollution Environmental liabilities Rights of indigenous people Flooding Extreme events Climatic change and variability	 x x x x x x x  x		 x x x x x x   x	 x x x x x  x x
<b>Reputational</b> Compliance and disclosure pressures Shareholder activism Corruption and business ethics Hostility to private sector Local sensitivities and needs	    x		 x x   x	 x x x x x
Special risks of dams	x	x	x	x
Special risks of irrigation			x	

## 2. Financial Institutions, Products and Practices

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### 2.1. Institutions

This report is concerned with the implications for financial institutions of trends and risks in the water sector. Its main target readership is the banking community, though it is also intended to have relevance to institutional investors such as pension funds, insurance companies and investment funds. Plus funds, trusts, etc. with a specific remit to finance “socially responsible” projects, including water and environmentally beneficial schemes.

Banks and other target financial institutions share two characteristic features:

- They are typically lenders, bondholders or portfolio equity investors in relation to the projects or enterprises they are financing. They also offer advisory services to clients. It is less common, though not unknown, for them to have a majority financial stake (i.e. be direct investors), or to play an active role in management and operations. Financial institutions typically have an arms-length relationship with the clients that they finance, and their influence, such as over risk management, has to be exerted in appropriate ways. However, financial institutions having a close relationship with a client (e.g. in retail bank lending, or where individual loans have a sizeable weight in their total portfolio) may be forced to take a pro-active interest in the client's operations. In a like vein, project finance, including loans to Special Purpose Vehicles (SPVs) draws financial institutions more deeply into management and operational matters, especially where problems arise.
- They are limited risk takers. Financial institutions' financial options are constrained by the nature of their liabilities – public bank deposits, trust funds, pension funds, etc. involving a fiduciary responsibility to savers and depositors, as well as their obligations to ordinary shareholders. Financial institutions are usually subject to statutory regulation over their choice of assets (e.g. securities usually have to be investment grade, as determined by a credit rating agency). Commercial High Street banks are also subject to central bank stipulations about their asset holdings and also have to observe the international convention (Basel II) on appropriate coverage of risky assets by their equity capital. In short, most financial institutions are more or less risk-averse, though this is changing and financial institutions are developing sophisticated methods of managing risk.

Institutions and companies that financial institutions lend to, invest in, or sell other services to are referred to in this report as clients<sup>2</sup>. These may be companies, governments, other public bodies, NGOs and not-for-profit bodies, or other members of the financial community.

### 2.2. Financial products

Although financial institutions are often loosely described as investors, it is best to keep in mind the distinction between lending, on the one hand, and investment in the strict sense of a financial involvement with an element of risk attached. Banks do not invest when they merely offer a loan<sup>3</sup>. The term investment normally applies to an equity holding. However, risk is not black and white - there is a spectrum of risk between a loan to a sound borrower with first class security, at one extreme, and an equity holding in a risky venture capitalist, or acquisition of junk bonds, at the other.

Between loans, which themselves can be more or less risky, and equities, which are of varying trustworthiness, are the various kinds of mezzanine finance plus bonds, which have a wide spread of riskiness, quantified by credit rating agencies.

Financial institutions operate on commercial lines, being obliged to their sources of funds to earn a

minimum rate of return and avoid unduly risky financing propositions (unless these are offset or hedged). Publicly quoted and traded financial institutions need to earn a market-related return. Any deviation from this, e.g. funding for CSR activities, or the pursuit of ethical, sustainability or other motives which do not offer the normal commercial return, will need special capital provision or other commercial and legal dispensation.<sup>4</sup>

In general terms, financial institutions can offer the following financial products:

**Loan:** can be programme lending to a government, public agency or utility, corporate finance to a private company or commercialised utility, or project finance for a specific project (or Special Purpose Vehicle).

**Retail and relationship banking:** typical “High Street” banking services such as offer of deposit and current accounts to individuals and small businesses, overdraft and loan facilities, and advice on customers’ financial affairs.

**Bond purchase:** either through the purchase of existing stock through market transactions, participation in Initial Public Offerings (IPOs), or syndications (including those led by international banks enjoying preferred creditor status).

**Equity holding:** (open-market purchase, portfolio or direct investment, taking up or guaranteeing IPOs, participation in venture capital and private equity funds)

**Mezzanine finance** (including convertibles, junior debt)

**Guarantees**, options and other derivatives

**Innovative products** (e.g. microfinance, ecosystem services)

**Socially responsible** and philanthropic initiatives (including community projects, green, ethical, water and environmental funds, etc.).

**Advisory services**

Financial institutions can operate at different financial scales, from microfinance and local community initiatives<sup>5</sup> to involvement in the largest syndicated bond issues and public share offerings.

## 2.3. Attitudes and practices

In response to market pressures and opportunities, financial institutions are becoming increasingly adept at recognising and managing risks. In the UK:

“...strong economic and market conditions, and intense competitive pressures have encouraged financial firms to extend their risk-taking. This has pushed the financial system as a whole further up the risk spectrum.”<sup>6</sup>

Water is merely one of the risks faced by the financial community, though it is crucial for some clients. In such cases, water-related risks (WrRs) need to be recognised on the same footing as other, more traditional, risks, and managed accordingly. This section reports the results of enquiries made from banks concerning how they currently perceive, and then act on, WrRs. It considers:

- Awareness of WrRs and sources of information used;
- internal procedures, methods and tools employed;
- influence of banks over their clients’ behaviour.

### 2.3.1. Awareness of WrRs and sources of information

Banks vary greatly in their awareness and understanding of WrRs. The following points have emerged:

- The degree of information collected depends on the type of financial involvement in a company, e.g. whether it is a commercial loan, or sizeable equity stake;
- there is a distinction between corporate and project lending: for the former, there is normally more



publicly available information, e.g. from credit agency reports and the financial press. For the latter, more internal due diligence may be required, supplemented by consultancy research, reports of NGOs, etc.;

- until recently, water did not appear much on banks' radar screens, except for directly water-specific projects. However, there is currently a surge of interest in water articles in the financial press, together with increasing coverage of sustainable banking, CSR, and corporate reputational risks. The appearance of the Equator II Principles, the UN's Principles for Responsible Investment, and other sources of peer pressure are maintaining a high profile for environmental – including water related- risks;
- in relationship banking local managers and loan officers rely heavily on their accumulated knowledge of customers and local background factors;
- insurance companies have had longer exposure to WrRs and a higher level of sophistication in using such information. Given the co-exposure of commercial and insurance risks, there would be mutual benefits in the exchange of information;
- the assessment of information is just as important as its quality, and the key to this lies in the capacity of the bank's own staff and the risk appraisal systems used. Information is often of a technical nature, and specialists should be available (if necessary, consultants) to interpret this for line managers;
- sector-specific checklists would be useful in identifying and managing WrRs.

### **2.3.2. Internal procedures, methods and tools**

- A bank's hierarchy may filter out water before it gets to the attention of top decision-makers. WrRs are likely to be better understood by middle level operators and environmental advisers than by top managers and directors. Until now, water has not been a sufficiently big issue to engage CEO interest. Banks do not automatically have WrRs as a separate risk category (though it is common to have wastewater or water pollution as a checklist item in environmental due diligence);
- it is difficult to quantify some WrRs, including pure intangibles, and damage from events which have so far been rare and "exotic". In such cases, ratings by credit agencies may not fully reckon the WrRs. Some banks think that credit rating agencies give insufficient attention to environmental and social risks, except where these are integral to the business (e.g. water-intensive projects). There are still no adequate tools to assess a company's exposure to WrRs (e.g. its "water footprint"). A framework is needed for weighting and measuring WrRs. Benchmarking companies according to their environmental performance and WrRs is gaining ground;
- there is no uniform internal procedure for assessing risk. Credit risk assessment departments are common. Some funds have advisory boards to flag up risks. Some risk screening tools are thematic. Sometimes risks are routinely flagged at board level, in other cases a specialist risk department takes a view on what information should be passed on to the board. Certain banks have a Reputational Risk Committee separate from the Credit Risk Committee;
- companies have in the past not provided sufficient information on WrRs for analysts and agencies to assess. The situation is changing, more transparency is happening, and credit risk departments are increasingly processing environmental data;
- a balance has to be struck between the use of experience, judgement and intuition gut feeling on the one hand, and the development of objective tools for risk screening and quantification on the other. These approaches are complementary, and there is no real trade-off between them;
- banks need an Early Warning System to flag WrRs and feed this data into their management structures at an appropriately senior level. Leading internationally recognised NGOs and other Watchdogs may provide important clues;
- banks also have an obligation to follow good practice in their own internal operations. "Good Housekeeping" entails accounting for the water use footprint of their own offices and suppliers, and following good practice in water use.

### **2.3.3. Banks' influence over clients' behaviour**

- In retail and relationship banking, it is possible to monitor clients' accounts, and where problems appear, make personal interventions. Potential risks thrown up in the course of gathering intelligence about the local economy, policy developments, etc. can be passed onto affected clients;
- in the course of their advisory services banks can have a great influence over the financial structure and institutional set-up of a project. Banks also have an opportunity to influence clients' choice of technology, or project design, e.g. in the course of reviewing costs, or choice of supplier. However, banks need to be wary of the legal implications of getting too deeply involved in their client's affairs. For this reason, some banks prefer to advise clients where to go for advice on specific matters, rather than offer advice themselves;
- the pursuit of due diligence enquiries in appraising financing propositions can provide the opportunity for exchanging views with the client;
- banks holding shares with voting powers can vote on company resolutions and introduce such resolutions where the situation warrants;
- where banks are substantial lenders to a company in difficulties they can take part in creditor group discussions to help to resolve the problems and can agree Step-In Rights (entitling the bank to appoint a new operator for the project as a last resort);
- the UN's new Principles for Responsible Investment contain a number of possible actions whereby banks can influence the adoption of environmental, social and corporate governance (ESG) by clients (Box 6).

## 3. Water-Related Risks and Opportunities

### 3.1. Water-related risks (WrRs) and client situations

Financial institutions are exposed to two broad categories of WrRs:

**Indirect risks**; risks affecting their clients which have repercussions on the financial standing of the financial institutions. There are many kinds of WrRs depending on whether clients are infrastructure providers and operators, suppliers to the water sector or water users. These indirect risks are examined in sections 3.2 to 3.4.

**Direct risks** affecting the reputation and market standing of the financial institution arising from the public and market perception of its own corporate governance, such as how it deals with risks affecting its clients, its involvement in sensitive and problematic loans, etc.. The financial institution can manage this risk either by adjusting its portfolio or by influencing its clients in various ways. Markets and shareholders may punish financial institutions for sins of omission if they fall short of expectations<sup>7</sup>. Reputational risks of this kind are discussed in section 3.6.

Indirect risks can create problems in clients which have financial consequences for the financial institution, such as lower debt servicing and repayments, reduced dividends and falls in the value of equity holdings. This would depress the value of the financial institutions' portfolio of assets, and dividends to the financial institutions' own shareholders would be affected. Their market share prices would fall and if problems persisted credit agencies would mark down the financial institutions' credit rating, making it more expensive and difficult for them to attract funds in future.

Indirect risks may become direct, when loans or equity investments become non-performing or problematic and the financial institution assumes closer involvement in the client's management and operations as a means of rescuing the original sum lent or invested<sup>8</sup>.

Many risks can, in principle, be estimated and quantified (rated) by a credit rating agency, which are fed into the agency's rating of the firm or institution concerned. As awareness about WrRs grows, we can expect more of these to be routinely factored in. Other risks are of a qualitative nature and may be non-quantifiable, or unforeseeable, though these may still be picked up and affect share values through the elusive concept of "market sentiment". In this context there is an important distinction between risk, ignorance and uncertainty<sup>9</sup>.

Banks are governed by national and international conventions on the treatment of the riskiness of different assets through differential backing from their own capital. "Basel II" is the new code drafted by the Basel Committee on Banking Supervision of the Bank for International Settlements.

In essence, banks taking on more risky loans have to provide more capital coverage against these loans, which has a clear opportunity cost and profit penalty. However, banks have the option of deciding for themselves where they think their greater and lesser risks are, and allocating capital accordingly<sup>10</sup>. WrRs should be part of this assessment.

Risks that are not sector-specific, such as the various kinds of sovereign risk, will not be considered in this paper - this is the realm of political risk insurance and export credit insurance. However, risks that are generic in nature, but which affect water with particular force, such as devaluation or regulatory hazard, do feature strongly in the discussion below.

The clients of financial institutions fall broadly into four categories on the criterion of WrRs:

Companies and public utilities involved in the construction and operation of **water infrastructure** for the provision of water and water services - extraction, storage, transport,

treatment, distribution, collection of wastewater, treatment and disposal. Dam construction is an important special case of this.

**Suppliers of equipment, materials and services** to the water sector and water users, such as households, public entities and other firms.

**Major users of water** - water-intensive sectors (irrigation, steel, brewing, etc) and **water-sensitive** sectors (e.g. polluters, those requiring a particular quality of water, e.g. mineral water bottlers). Plus any other business with a sizeable water footprint; firms in a water-short or environmentally-sensitive area; and businesses which, for any reason, are exposed to public scrutiny for their use of water.

Finally, **all businesses** are potentially exposed to reputational risk from a failure to comply with public expectations or varying degrees of moral pressure on corporate governance.

These situations present both opportunities and threats, but the two may be the same, viewed from different sides. Shortages of water are a threat to firms that are water-intensive but an investment opportunity for producers of equipment for water recycling, water saving, desalination etc. Contaminated drinking water is a problem for the service provider but an opportunity for producers of bottled water and household filters.

In short, one firm's risk may be another's opportunity. Equally, an opportunity missed may be a risk, if a competitor seizes the chance and increases market share. Managing risk and meeting public and market expectations can win market credibility and reap tangible financial benefits. A financial institution with a strong "sustainability" policy will avoid certain stocks in choosing its portfolio, but will gain market share from the growing number of investors with positive and pro-active views on these issues.

## 3.2. Water infrastructure and utilities

### 3.2.1. Different regions - different problems

The risks from financing water infrastructure vary enormously between different regions, making broad generalisations difficult.<sup>11</sup> In mature water systems, demand and revenues are fairly predictable. Governments and/or regulators closely control tariffs but are unlikely to allow major monopoly undertakings to fail. Finance raised by publicly-owned systems (e.g. bonds) is less risky than shares or project finance raised by private companies. Characteristic risks include: ignorance about the true condition of old underground systems and therefore of the likely cost of rehabilitation; regulatory overkill, reducing the rate of return to equity<sup>12</sup>; environmental concerns, increasing difficulty in developing new supply sources; and seasonal or regional water shortages, reducing sales revenues and necessitating expensive short term supply solutions.

In transitional economies such as those of Central and Eastern Europe and the former Soviet Union, the problems are different. Typically there is an over-developed infrastructure built for an industrial base that no longer exists, but which is badly in need of repair and modernisation. Household tariffs, formerly generously cross-subsidised by industry, have had to rise. Overall demand everywhere has declined, and with it financial revenues.

The diversity of circumstances and risks even within one continent is illustrated in Box 2.

## Box 2: The Three Water Europes

**Hydraulically speaking, Europe falls into three distinct groupings:**

**Northern and Western Europe** has a generally ample water resource (though with seasonal and regional scarcities) and minor agricultural usage. Its water sectors follow different organisational models but are typically efficiently run, and have adequate finance based on cost recovery from users, supplemented by borrowing and equity capital in certain countries. On a pragmatic view, the private/public distinction is becoming less relevant, and the models are convergent. The main challenges faced are: growing public environmental consciousness, anti-pollution efforts, stress on leakage reduction and policies for demand management of water, and the imperative to shift water planning and management to river basin scale following the EU Water Framework Directive.

**Southern Europe**<sup>13</sup> in contrast, faces a serious and growing resource scarcity across many parts, uneven efficiency, with some privatisation superimposed on a basic public sector model. The region has a major deficit in wastewater treatment to make up. There is growing interest in demand management, driven by scarcity. The high cost of compliance with EU directives has so far been funded by EU subsidies and government grants. Cost recovery from users is low. There are large agricultural sectors, taking a high share of available water, and constituting a financial burden on the sector. Among the region's main challenges are the cost of completing investment programmes required by EU directives; resistance to tariff increases specified by polluter-pays clauses of the EU Water Framework Directive (WFD), overcoming water shortages and dealing with North-South frictions within countries

**The New Europe** (Central, Eastern and South-Eastern countries) - has resources that are generally adequate, in fact too plentiful in some cases where there are serious recurring floods. In the South-East agriculture is an important user of supplementary water. Infrastructure has been highly developed, but is in poor condition after years of neglect (and, in the Balkans, civil war). Wastewater collection and treatment is very uneven. The sector is organised largely on public sector lines, with some concessions, joint ventures, and private operation. One of the main challenges is the high cost of investment to modernise, and for developing the wastewater side. Tariffs and cost recovery are low, though investment is bolstered by the EU Instrument for Structural Policies for Pre-accession (ISPA) grants and borrowing from EBRD and EIB. The revenue base is under threat from declining consumption and shrinking industrial base (formerly the main source of cross-subsidy to keep domestic tariffs down). Serious surface water and groundwater pollution remains to be tackled.

In **emerging and developing countries**, risks tend to be related to the costs of expanding networks to serve rapidly growing populations, particularly in urban areas but also in rural areas targeted by the UN's Millennium Development Goals. Many of these potential consumers are poor and affordability is an issue – at the same time as existing networked users resist tariff increases, citing poor existing services. Unless public guarantees are available, financiers have to rely on the cash flow of utilities – which is affected by affordability and tariff resistance, and the reliability of contract or regulatory agreements, which are liable to re-interpretation and interference by politicians.

**3.2.2. Categories of risks and mitigants**

Characteristic risks of financing water infrastructure and utilities include the following (which apply to both public utilities and private operators):



### **Project profile**

A typical project comprises of high investment in the initial years with a large negative cash flow, eventually turning into a modest positive cash flow due to revenue increases, which continues into the long term. Water supply, wastewater, and related hydro projects are amongst the most capital-intensive of infrastructure investments. Their assets are typically unusable for any other purpose and cannot be removed, hence the investor depends totally on future revenue to obtain the desired return. At the point when investment is completed, the investor is largely at the mercy of the host authorities (hence the importance of a strong and independent regulator).

These basic project risks are hard to avoid, but their financial implications can be mitigated by a careful match of loan terms with cash flow profile. An appropriate finance package might mix equity, with soft and commercial finance to get right leverage for the project.

### **Low rates of return**

Due to delayed positive cash flow and resistance to tariff increases, financial rates of return in the water sector are among the lowest of any sectors<sup>14</sup>. Contrary to the situation in developed countries, where water is considered a very safe investment<sup>15</sup>, the risk-adjusted return on water in developing countries may be even lower than its nominal ex ante level, and there have been losses in a number of high profile cases.

The poor profitability of water in many countries is at the heart of the financing problem.

There is a genuine affordability problem for poorer consumers. Overcoming this requires reforms across the sector as a whole, including commercialisation of the water provider, tariff reform, improvements in billing and revenue collection, reduced waste and leakage, and visible improvements in the quality of service to justify tariff increases. The latter need to be transparent, enforceable but equitable. Where regulation is weak or opaque, a monopoly utility may exploit its position, or be open to criticism for this. Waste water services are even more difficult to make profitable, and in most cases where tariffs are levied they are wrapped up with water billing.

### **Foreign exchange risk**

Practically all revenues from water projects arise in local currencies. This implies that borrowings or investments that have to be serviced, repaid or reimbursed in foreign currencies pose a devaluation risk<sup>16</sup>. In practice, over the last decade, most of the large private concessions and joint ventures have been affected by devaluations in their host countries, some of them disastrously. It is effectively impossible to insure against foreign exchange risk. A common way of dealing with devaluation contractually is to allow tariffs to increase according to a formula that includes foreign exchange movements, but in the case of massive changes such formulae are usually sidelined because the implied tariff increases would be unrealistic<sup>17</sup>.

The most obvious way to avoid a forex risk is to raise funds locally. Many local banks do not currently lend for the long tenors required, and local investors are unattracted by the returns offered in water. A number of countries also discourage foreign investors from borrowing in local markets because this hardens borrowing terms for governments themselves, who exploit their monopsony position in a pliant local market. In the long term mitigating forex risks depends on developing local capital markets, using external guarantees, local bond issues by international financial institutions, etc. Banks can assist by offering safe and rewarding outlets for local savings, which then become available for financing local infrastructure.

### **Sub-sovereign risk**

During the last two decades central governments have devolved the responsibility for providing water services to sub-sovereign bodies such as municipalities or regional agencies. In general, these entities

have not been given equivalent powers to raise finance. Cities that are larger and financially stronger may have no difficulty raising bonds and loans on their own account, but most depend on a central government guarantee or other support, which is usually given sparingly since it represents a contingency liability on the central budget. Central governments often bar sub-sovereigns from raising money themselves<sup>18</sup>. Municipalities also tend to lack the expertise in raising outside finance, and their financial management is weak. Some international financial institutions are debarred from lending at this level.

Supporting the financial capacity of sub sovereign entities is clearly urgent<sup>19</sup>. Various methods are available to enhance their creditworthiness, such as uptake of national and external guarantees, ring fencing water revenues in escrow accounts, the spread of national credit rating of sub-sovereigns, peer pressure, benchmarking, municipal pooling for bond issues, use of fiscal intercepts from central budgets, etc.<sup>20</sup>.

### **Political and regulatory risk**

Because water is such a basic good it is often exploited for political reasons. Political risk arises when there is a likelihood of politicians intervening to override the terms of agreed contracts, or to exploit ambiguities in them. This is particularly likely to happen at the completion of an investment programme, when tariff increases are due. The delegation of powers, whatever its other advantages, has tended to increase the risk of local political interference in tariff setting.

Political risks can be reduced by delivering clear and early benefits in service to local consumers, and by transparency in the awarding of contracts and in operational decisions. Creating partnerships with local companies and other stakeholders has also proved to have operational benefits and improve the robustness of deals. Good regulation can also increase confidence in contractual undertakings. Its absence creates regulatory risk - where investors and operators cannot rely on a stable and impartial regime to govern their activities. Even in mature water economies unexpected actions by the regulator can create risks for operators, their shareholders and financiers.

### **Contractual risk and information asymmetry**

Contractual risk is magnified where contracts have a long life. Water system concessions typically extend to 25-30 years, leases, BOTs, operating and management contracts rather less. Over such long periods the operating environment is likely to change, e.g. because of changes in national policy, water quality standards, availability of the raw water resource, etc. This is not made easier by the fact that many contracts are bid for and accepted without the bidder having full information about the extent and condition of the network (much of which is underground) and installations, and the customer base. Contracts may not be flexible enough to accommodate subsequent adjustments. Even where contracts contain dispute resolution clauses, these may not deliver timely results.

Although contractual risk is endemic it can be reduced by such measures as: support for bid preparation and tendering; creation of project preparation facilities; allowing some flexibility in contracts and regulation to allow re-negotiation and revision of procedures faced with an unexpected development, etc. Financiers can also avail themselves of political risk insurance, Partial Risk Guarantees, Breach of Contract cover, participations (B loans), all of which can offlay risks of this kind.

### **Resource failure**

Global warming and the related risks of climate change (e.g. less predictable weather patterns, more extreme events of flooding and drought) have exposed the possibility of water shortages in an increasing number of countries and of regions within others. Added to this, are the serious water shortages of growing cities in developing countries, and falling groundwater levels. Water shortages affect infrastructure operators as well as water-using industries, and at a macroeconomic level droughts have been shown to have a serious effect on general economic growth.

Faced with water shortage, service providers lose revenue, and are forced to take exceptional steps to secure supplies at extra cost. They can seldom recover all excess costs from tariff surcharges; in fact the costs of compensating for the depletion or contamination of the normal source are rarely foreseen in contracts, and become a source of contention with the regulator. At times of water shortages there is close scrutiny of all aspects of water service providers (e.g. currently in Southern England)

### 3.2.3. Private sector participation (PSP)

There is a spectrum of types of PSP in the provision of water services (in roughly increasing order of difficulty and risk):

- Sub-contracting of discrete services (e.g. metering, repairs, revenue collection);
- contracts for operation and management of a system (flat fee or performance-related);
- leasing systems from the public owner in return for a rental fee, with revenues retained by the lessee;
- concessions to take over and operate a system for a number of years, making all necessary new investments, and retaining revenues, and eventually returning assets to the public owner. The BOT/BOOT/DBOT is a special case of this (see below);
- joint ventures with a municipal or public partner for operation or ownership (or both) of a system or water facility;
- full divestiture of a publicly owned asset to a private company.

The main risks of **private concessions for whole systems** are as described above (2.2.2.). In assessing potential business opportunities, private sector operators look for the following features:

- Sound project with good prospect of early cash flow
- Experienced promoter able to offer necessary securities or guarantees
- Good market potential
- Strong political backing for the project
- Adequate general legal framework and well developed contract law.
- A system of independent regulation. Failing this, an independent arbitration or appeals system.
- Sound macroeconomic policies and prospects

Investors will turn a blind eye to the absence of some of these conditions if others are sufficiently compelling. Risks which are most often noted by private investors in water are: regulatory risk, policy on disconnection for non-payment, failure of a public body to adjust tariffs as agreed, payment failure or delays by government, dispute over termination payments, and macroeconomic shocks, particularly unexpected changes in the exchange rate.<sup>21</sup> In recent years the last mentioned has been particularly damaging.

Many operators view management contracts and other limited-risk contracts (e.g. loss-reduction programmes) as a means of getting to know the local market and customer base, which may be the precursor to bidding for riskier contracts such as concessions.<sup>22</sup>

Concessions for single asset projects (e.g. water treatment, wastewater treatment, desalination plants) often take the form of a Build Operate Transfer, a Build Own Operate Transfer, a Design Build Operate Transfer contract, or permutations of these. These contracts usually leave the contractor with the risks of raising finance, construction, commissioning and operation for the contracted period (Box 3) in return for an assured stream of payments (Take or Pay) for the provision of services to the public client. At a specified future date ownership of the facility is transferred to the public client.

### Box 3 Risks of single-asset BOTs (with special reference to wastewater projects)

- Difficult trade-off between cost and the ability to meet design parameters
- Imperfect knowledge of demand catchments
- Tight deadlines for completion and commissioning, with risks borne by contractor
- Tight contract structure<sup>23</sup>
- Leakage of risk to the Special Purpose Vehicle, with impact on equity and debt

Source: presentation by ING Bank at Seminar on water project finance, Trinity House, London, 7 June 2006.

There is also reputational risk due to hostility in many quarters to the private provision of water and profits earned from its supply. This attitude is partly irrational, and may be due to ignorance, prejudice or a vested interest in preserving the status quo. However, criticism has been stoked by problems in some recent high-profile concessions. Even in developed countries such as the UK, reports of profit increases in water companies at a time of water shortages and restrictions arouses hostile public comment which, filtered through politicians and regulators, can affect share values. Hostility to PSP in water is a fact of life in some quarters, and needs to be understood and handled properly.

#### 3.2.4. Dams and major infrastructure

Dams and other kinds of major hydraulic infrastructure (such as bulk conveyance schemes) are especially prone to risks, notably site-specific construction risks; unforeseen environmental impacts; delays due to procedures, public stakeholder consultations and protests; a high degree of contractual risk; and reputational risk to sponsors, lenders and investors. The sustainability of large dams and reservoirs is also in question, due to factors such as siltation, local health impacts, and risks posed by local seismic activity.

The publication of the Report of the World Commission on Dams (WCD, 2000) signalled the onset of a more rigorous and discriminating climate of opinion, in which the burden of proof for new dams proposals is a great deal higher than in the past. Few would disagree with the detail of the report and its recommendations, but, taken as a whole, its proposals add up to a formidable hurdle for new dam proposals to surmount. The new generation of dams will be more carefully chosen, and government funding will remain important, arguably more so, with active re-engagement of development banks and donor agencies in this sector.

New models of private funding are likely to be required. There will be an unusually heavy role for governments and MFIs in promoting this sector through the creation of a supportive environment with regulation, incentives and risk sharing. The full range of instruments will need to be deployed, including loans, technical assistance, guarantees and other innovative methods to overcome risks (Box 4).

### Box 4. Brazil's Energy Reallocation Mechanism (ERM)

The ERM provides a framework for private lending. In Brazil hydropower provides 95% of electricity, yet there are great seasonal and geographical variations in hydro availability. Under the ERM, each plant is awarded an "energy credit" based on its firm capacity and "normal operating capacity" in the light of hydrological conditions. These credits are reallocated depending on changes in actual water conditions. The credits enable individual plants to meet their financial commitments even when water conditions compel them to produce below normal capacity.

The model of private financing enshrined in the concept of Independent Power Producers (IPPs) – used for both thermal and hydro projects in the 1990s – has been re-evaluated. Many early projects were abandoned or renegotiated, and new projects of this type are more critically received by investors, operators and lenders. A fundamental problem is the application of the basic principle of risk management – that risks should be passed to those best able to bear them or who can mitigate them at least cost.

Under the IPPs some risks were passed onto private partners that they were ill-equipped to shoulder – such as the construction and commissioning risks on a unique site with significant unknown seismic, geological and hydrological properties, with major environmental and procedural risks. Lenders and agencies, for their part, are increasingly fearful of “reputational risk” from association with such projects. Private firms, and the banks funding their work, are resisting the assumption of these risks, except at very high risk premia, which greatly add to the cost of the project. Such risks are de facto migrating back to the public sector sponsor, which calls into question the basis of the original pact.

According to one view, the logic of this trend is for the public sector utility offtaker to retain ownership and total control of the project at all stages, and raise funds by bonds backed by government and international guarantees (Head, 2004).

### **3.3. Suppliers to the water sector**

The water industry is a major global business sector and covers companies that sell equipment, supplies and services to water infrastructure operators and households, as well as to other firms and institutional buyers. A wide range of items is involved, as illustrated in Table 1. (BOT contractors are a hybrid between infrastructure operators and suppliers, since they provide the finance and construction of a project and its subsequent operation, before eventually transferring ownership to the public sector client. These projects have specific risks of their own, discussed in section 3.2.3 above).



Table 1. The water sector as a market<sup>24</sup>

Sub-sector	Annual market \$ bn. [US portion only]	Observations, opportunities, risks
Pumps	25 [5]	Sensitive to construction cycle, energy costs and subsidies. May hasten groundwater depletion
Valves	40 [8]	Markets mainly industrial, commercial and private
Water testing equipment	4 [2]	Opportunities from stricter water quality regulation
Municipal water and wastewater treatment (at the beginning and end of the water cycle)	138 [21]	Municipalities the main market; disposal and reuse of sludge a growing problem; many BOT-type contracts with take-or-pay offtake provisions; PSP contracts controversial; includes desalination – sensitive to energy costs.
Industrial water treatment	80 [24]	Sensitive to local environmental regulations
Residential water treatment (enhancement of water quality, softening, reduction of sediment and rust)	18 [9]	Households the main market. Poor municipal water an opportunity.
Filtration	25 [11]	As for item above
Infrastructure (pipes, fittings, hydrants, valves, meters, service and repair equipment)	40 [10]	Markets are municipalities, private utility operators, and contractors. See section 3.2.1 for risks
Automation	3 [1]	
Engineering and consulting services	11 [4]	
Total	384 [95]	

Source: Goldman Sachs report: Water Sector Primer, June 15, 2005. n.b. above totals do not correspond with total of \$365 bn quoted in report summary.

Suppliers' WrRs are derived from those of the markets they sell to, and they experience knock-on risks from their markets which are often magnified. Primary changes in economic activity in a water-using sector can lead to a disproportionate change in the demand for stocks of materials (due to the inventory cycle) and an investment decision, which may be a minor item in a firm's overall turnover, will represent a major change in demand for firms supplying capital goods.

With this in mind, a starting point for considering suppliers' WrRs is the inventory of risks faced by infrastructure operators (section 2.3). The picture is complicated by the fact that many of the large water infrastructure operating companies also have subsidiaries making equipment and supplies and offering services, which internalise risk.

Table 1 indicates some of the more specific risks faced by specialist suppliers. Each of these "risks" can also be seen as a market opportunity. They can propel businesses into new product and service areas, and confer first mover advantage in these market segments.

In general terms, WrRs for suppliers can arise from:

- Unforeseen changes in environmental legislation affecting the choice of water technology used by providers and households;
- climatic changes and weather-related catastrophes producing droughts, floods, storm damage);
- changes in prices and availability of items complementary to those being supplied (e.g. the price of energy affecting the demand for desalination plant, the price of chemicals affecting particular types of water treatment).

### 3.4 Water-intensive users

#### 3.4.1. Water availability and water quality

All businesses, whatever their size or product, use water in one form or another. All water users are also potential polluters, if their wastewater is not properly collected and safely treated and disposed of. Shortages of water, which can lead to interruptions or failures of supply<sup>25</sup>, or permanent reallocation to other sectors, can have a serious impact on firms, even those that are not water-intensive. The contamination of regular water sources may force firms to relocate or install expensive remediation equipment. Increasingly stringent anti-pollution regulations and fines also raises costs of water-intensive firms compelled to pre-treat their effluent.

These factors affect producers depending on suppliers who are themselves water-intensive, e.g. food processing companies, and core businesses with water-intensive peripherals (e.g. hotels with golf courses). The full water footprint of a business should take these indirect and life-cycle effects into account.

Increasing water scarcity and competition for its use between different sectors of society are likely across a large swathe of countries. However, extreme and prolonged shortages of water constitute droughts, which cause serious loss of life and economic damage. Since 1965 the greatest losses of life through drought have occurred in India and the Sahelian region of Africa, but serious economic damage was also sustained in the USA and such unlikely places as Canada and the UK <sup>26</sup>. The drought in Zimbabwe in the early 1990s was associated with an 11% decline in GDP and a 60% decline in stock market values. The 2000 drought in Brazil led to a halving in projected economic growth, and the 1988 drought in the USA caused direct farming losses of \$13 billion.

#### 3.4.2. Irrigated agriculture

As a water consumer agriculture attracts Headline Statistics; globally, it accounts for 70% or more of water use.<sup>27</sup> It is therefore potentially the most highly sensitive of water-users to the trends discussed here. Finance is required for public irrigation schemes, groundwater development, use of catchments, improvements of rainfed systems, processing, aquaculture, etc.

With such a broad and diffused sector, its financing requirements are difficult to estimate with any precision. Earlier estimates claimed that current levels of annual investment, in the region of \$25-30 billion, needed to rise to \$40 billion by 2025. The latest estimate, taking a rather broader definition of the sector, is that the annual investment and running cost of all water resource-related management would need to be \$47 billion in 2005-15, and \$67 billion in 2015-2030 in order to meet international goals for the relief of hunger<sup>28</sup>.

What is clear is that future investment in this sector will have to be very different from that in the past, which was dominated by large public surface water schemes. In future the need will increasingly be for rehabilitation and conversion of existing schemes, the development of smaller schemes - many involving groundwater, improvements in efficiency in water use on all schemes including rainfed farming, drainage and pollution control, etc. Irrigation has new social roles and demands placed upon it and will have to satisfy access for the poor; the needs of a growing number of female farmers, the growing competition for water from other sectors, and more stringent environmental concerns.

Major infrastructure is largely financed by the public sector, with some help from international agencies. The latter are starting to re-engage with this sector following a decade or more of decline, which was a reaction to the disappointing performance of many earlier projects, the growth of environmental concerns and due diligence procedures, and opposition from some stakeholders. However, much water for agriculture is financed by farmers from their own resources, supplemented by credit. This includes most groundwater development, many smaller schemes and most commercial farming. Households and small rural businesses using water for productive purposes draw on a variety of informal sources.

The financial returns from public irrigation schemes have been generally poor, though these tend to understate economic returns, which are often higher. This illustrates the difficulty of evaluating such investments in a sector where the prices of outputs and inputs are widely distorted and which serve social purposes that cannot be fully captured in financial returns.

Irrigation water from surface sources is widely subsidised, as opposed to groundwater which is mainly a private concern (though energy prices may be subsidised to keep down the cost of pumping). Dependence on subsidies is one reason why so many public schemes lose money and why so little private investment has been attracted to the supply of irrigation water for sale. Poor cost recovery has meant that insufficient funds are being spent on maintenance and routine replacements, hence much public water infrastructure is deteriorating.

Against this background, the major risks of financing irrigated agriculture are summarised in Box 5. Some of these are similar to those of water infrastructure operators, others are more specific.

Box 5. Summary of risks of financing irrigated agriculture.

Risks	General mitigants	Financing options
Project profile and cash flow	Financing structure to match project profile and cash flow; increase cost recovery from farmers	Sufficient grant and equity;Adequate loan tenor;Partial Credit Guarantees to cover later servicings
Production, client and credit	Credit risk assessment by experienced institution; Use of local financial intermediary	Credit risk insurance (e.g. Partial Credit Guarantee);Collective security schemes;Liquidity and refinance facilities
Market	Governments provide market intelligence; Investment in supporting infrastructure (e.g. access roads, storage facilities)	Adequate capitalization of borrowers
Environmental	Investigation, due diligence, consultation, option appraisal;Appropriate risk allocation by public sponsor	
Climatic, resource shortage	Diversify water sources;choice of drought-resistant crops	Weather insurance and exotic derivatives
Foreign exchange	Use local capital markets for funds	Credit enhancement of local bonds and guarantees to local bank;MFIs raise funds locally, and on-lend in local currency
Sub-sovereign	Institutional reforms to ensure financial autonomy and sound cash flow	External guarantees; Agreements with sub-sovereign institution and sponsor
Political, regulatory and contractual		Political risk insurance;Partial Risk Guarantees;Breach of Contract cover;Participations (B loans) to confer preferred creditor status

Source: Progress Report, “Financing water for agriculture”, GWP & WWF, March 2006

Although the price of water supplied from public schemes is universally low, it is likely to increase in future to reflect growing scarcity, increasing claims from other sectors, and the switch of farmers into more profitable crops. Farmers in Europe exemplify these trends, and face increases in water charges to “full cost recovery” levels by 2010 under the terms of the EU Water Framework Directive. These same farmers will also bear extra costs from dealing with the effect on water quality from the release of nitrates and other contaminants.

In the USA growth in the demand for water will increasingly have to be met by reallocating existing supplies, which will be at the expense of agriculture, the largest users. This will have a big local impact on irrigated output and rural economies dependent on it. In Australia farmers are familiar with recurrent droughts and the government has recognised the cyclicity of farm incomes in a special taxation incentive.<sup>29</sup> However, competition for water from urban and ecological use “environmental allocations”, moves to increase its price, and the growing assertion of the water rights of indigenous peoples are all factors threatening agriculture’s share – particularly crops such as sugar, rice and cotton. Northern

regions of China face serious and growing water shortages due to a combination of excessive upstream abstractions, rapidly declining groundwater levels and serious pollution. Unless effective action is taken, it seems inevitable that agriculture will have to reduce its water usage.

Agriculture should not automatically be viewed as a victim of environmental change, it is also an active agent. The environmental externalities of irrigation are well documented, such as widespread salination of soils in South Asia, desertification of whole regions (e.g. the Aral Sea). The realization of these effects, and growing environmental awareness, is even leading to the reversal of some developments – abandonment of some schemes, and demolition of dams.

Rainfed agriculture and forestry are also victims and agents of environmental change. Different cropping patterns have different effects on downstream water users. Forest clearance can aggravate water availability: conversely, planting trees along water courses can reduce river flow and is discouraged (e.g. in South Africa) and afforestation affects the amount and timing of run-off, which is also of concern to other catchment users. These effects become risks for investors in rainfed farming and forestry through the passage of legislation, fines, levies, abstraction charges, etc.

### 3.4.3. Other major water users

Water is used in industry in various ways – as a direct raw material, used for washing and cooling, creating steam for energy, cooking and processing, etc. A small proportion of overall water use is consumptive, but much of it is returned to water systems as effluent. Thus the main impact of industrial water use is on its quality for use elsewhere. The main industrial sectors contributing to organic water pollution, in both high- and low-income countries, are food preparation and processing, paper and pulp, textiles, metals and chemicals.

Water-intensive industries are potentially at risk where water is becoming scarce and has to be reallocated to human consumption. However, authorities are often reluctant to see industries close down or scale back their activities for this reason, in view of their local importance for income and jobs. Industries also have various options for reducing their water withdrawals, such as recycling, reduction of leaks and wastage, introducing more water-efficient processes, etc.

The greater threat is that anti-pollution measures taken by public authorities will require expensive re-engineering, and in extreme cases closure or relocation of plants – with their attendant costs. Few developing countries have come to grips with industrial wastewater pollution, and its negative impacts on freshwater sources, and the remediation costs forced on industrial polluters are likely to escalate sharply.

Mining is one of the most water-intensive sectors, both as an abstractor and polluter. Its decisions can have major ramifications for other water users affected by its operations (Box 6)

#### Box 6 BHP Billiton's Olympic Dam mine, South Australia.

"The mine currently draws 33 ML per day from underground water sources (The Great Artesian Basin). This water is saline and requires desalination prior to mine use, adding to the cost of production at the mine. A proposed expansion, which requires an additional 120 ML per day of water, has met with stakeholder opposition concerning the impact on surface environments and the sustainability of the Great Artesian Basin. Alternatives to underground water sources include the development of a seawater desalination plant and pipeline of approximately 350 km. While this alternative may benefit the sustainability of the Artesian Basin, it involves environmental trade-offs, including increased energy intensity to operate seawater desalination plants."



Sectors that are not water-intensive in absolute terms may be relatively major users in their local communities, especially if local shortages develop. This applies for instance to hotels and golf courses located in dry areas, with sizeable populations close by. Investors in projects of this kind could be vulnerable to increasing water prices and growing water scarcity (see chapter 3).

### **3.5. Flooding and natural disasters**

65% of people affected by natural disasters are accounted for by flooding. Between 1973 and 1997 an average of 66 million people annually suffered flood damage. In the ten-year period 1987-96 flooding claimed 228,000 lives in Asia alone, causing \$136 billion of damage to the economies affected. Nor is the problem confined to tropical and sub-tropical areas – in recent years the Southern States of the USA and countries of Central Europe have also been badly affected. Flooding affects regions that least expect it: more people die from flooding in dry areas than from drought, since they are unprepared for it.<sup>30</sup>

Disastrous flooding is increasing in its incidence and extent, due to the growth of populations in flood-prone areas and land use practices in water catchments. Climate change is also blamed for the apparent increase in coastal flooding due to storms, hurricanes and high tides.

### **3.6. Reputational risk for all businesses**

#### **3.6.1. Public attitudes and expectations**

In recent years several strands have joined to place a greater obligation on firms to disclose and justify their water use and impact - at all stages of production, consumption and disposal. Some of the key factors have been:

- Growing public environmental awareness and a greater understanding of the critical role of water in different economic and commercial facets of life;
- concerns about potential water shortages and contamination of supplies;
- the mainstreaming of responsible investment issues and the growth of special water-related investment vehicles. Amongst investors there is an increasing awareness that abuse or misuse of water can have a material, detrimental impact on business where water is a factor;
- growth of shareholder activism leading to greater corporate disclosure and transparency around new material risk issues, including water use and water as a critical factor of production for various industries;
- growing public pressure on firms to embed Corporate Social Responsibility disciplines in their core business lines;
- the production by influential agencies of codes of good practice and guidelines (e.g. the UN Principles for Responsible Investment, the Equator Principles and the GRI sectoral reporting guidelines).

### Box 7. Influential opinions: Straws in the Wind

Question: "If you could change one thing about the business, financial and commercial environment, what would it be?"

Answer: "I have a concern that we are using up the Earth's resources at an unsustainable rate so I would like to see sustainability achieve a greater prominence in the thinking of businesses and governments across the world."

(Interview with John Roberts, former Chief Executive of United Utilities, *The Times*, May 1, 2006)

"...few institutions are as well placed to encourage social responsibility as banks are. By integrating social, environmental and corporate governance objectives into their operations banks can have a huge influence on those they lend money to."

(David Cameron, M.P., Leader of the UK Conservative Party, speaking at the Financial Times Sustainable Banking Awards ceremony on June 12, 2006)

"Sustainability issues are very important for most banks. It started out being done for defensive reasons, to protect their brand, but more and more people tend to see this as a business opportunity."

(Interview with Lars Thunell, Vice President of IFC, in *Financial Times Special Report*, June 12, 2006)

These trends affect businesses operating in both developed and developing countries. They apply to both financial institutions and the businesses they finance – in fact many people argue that financial institutions are the key to converting business to sustainability because of the financial muscle they can exert.

CSR, sustainability, and the codes of behaviour they have inspired are arguably most relevant where the laws, policies and institutions of the host country are weakest: firms are in effect being asked to occupy a policy vacuum left by government. However, there is also a case for sustainability practices in countries with high standards of governance, where market prices and laws give the wrong signals to firms because they do not reflect the true situation of the water sector (e.g. where water tariffs are too low, pollution is not penalized, abstraction licenses and fees do not reflect growing depletion, etc).

A key issue for public policy is how far CSR should continue to be voluntary, and how far it should be enforced by legal changes. This is a complex matter, but two examples can be given to illustrate the problem:

- In the UK a new Company Law Reform Bill being considered in Parliament would require company directors to take into account the impact of their decisions on the environment, amongst other concerns. This provision is described by a respected financial commentator as "...silly and likely to be perverse. Market forces and consumer and union pressure would be far more effective."<sup>31</sup>
- Greater disclosure (e.g. of environmental practices, voting record) is generally considered desirable, yet if it becomes excessive and mandatory it could have perverse effects. "Changes to company law should never make life harder for listed companies than for those under private ownership....Least of all should laws give any incentive to go private and become less accountable. The more regulations and disclosures are forced on listed company directors, the more attractive private equity structures seem for executives..". The same commentator observes that many major British companies, some with a huge local environmental impact, are now owned by private equity groups or foreign companies and, as such, are beyond the reach of local shareholder pressure or accountability.<sup>32</sup>

The **Equator Principles** (2003) represent a landmark in converting financial institutions to sustainability. Brokered by the IFC with a number of leading commercial banks, the Equator Principles (EPs) have been described as “An industry approach for financial institutions in determining, assessing and managing environmental and social risk in project financing”. They apply to project financings with a total capital cost of \$50 million or more. The EPs were based on the IFC’s social and environmental guidelines for sustainable development. For projects that are considered more at risk according to IFC’s screening, an Environmental Assessment has to be prepared which satisfactorily addresses a number (17) of social and environmental concerns.

A revised set of guidelines – Equator II – was approved in July 2006 by the Equator Banks, who now total 41. These are based on the new IFC Performance Standards, which include enlarged requirements for labour conditions, community health, safety and security, and pollution prevention and abatement. There will also be stronger safeguards for community involvement and consultation, grievance mechanisms, use of security forces, biodiversity protection, greenhouse gas monitoring, and disclosure. The new project threshold will be lowered to \$10 million and the EPs will also apply to advisory services.

Banks that subscribe to the Equator Principles find that these “don’t come cheap” (in the words of one respondent) in terms of the extra due diligence they impose. Subscribing banks have also found that they lose business to others, particularly local banks that do not subscribe. However, a growing number of banks are finding the Principles obligatory in giving clients access to international finance.

A further landmark was the announcement in April 2006 of the Principles for Responsible Investment, sponsored by UNEP FI and The Global Compact (Box 8).

### Box 8. UN Principles for Responsible Investment

Signatories would commit to the following:

Incorporation of ESG issues into investment analysis and decision-making

- Address ESG issues in investment policy statements
- Support development of ESG-related tools, metrics and analyses
- Assess the capabilities of investment managers to incorporate ESG issues
- Ask investment service providers (e.g. analysts, consultants, brokers, research firms, rating agencies) to integrate ESG into research and analysis
- Encourage research on this theme, and advocate ESG training for investment professionals

Include ESG in financial institutions' own ownership policies and practices.

- Exercise voting rights or monitor compliance with voting policy
- Develop an engagement capability and take part in developing policy, regulation and standard setting.
- File shareholder resolutions consistent with ESG
- Take part in collaborative engagement initiatives
- Ask investment managers to undertake and report on ESG-related engagement

Seek disclosure on ESG issues by investee entities

- Seek standardised reporting on ESG issues
- Request ESG to be included in annual financial reports
- Ask for information from companies on the adoption or adherence to relevant norms, standards, codes of conduct or international initiatives.
- Support shareholder initiatives and resolutions promoting ESG disclosure

Promote acceptance and implementation of the PRIs in the investment industry

- Include PRI requirements in requests for proposals
- Align investment mandates, monitoring procedures, performance indicators and incentive structures accordingly
- Communicate ESG expectations to investment service providers
- Reconsider relationships with service providers that fail to meet ESG expectations
- Support the development of tools for benchmarking ESG integration
- Support regulatory or policy developments that enable implementation of the PRIs

Collaboration and reporting on activities and progress

- Collaboration, networking, communication and reporting on all the above

Source: Principles for responsible investment. UNEP FI and The Global Compact, 2006

Water impacts may be used as a political lever by stakeholders with other vested interests. In conditions of growing water scarcity and competition for its use, farmers, whatever their legal rights, may object to the abstraction of water by industry on the grounds that it would destroy jobs, livelihoods, food, amenity, etc. Environmentalists are likely to stress the benefits of the in-stream use of water, as against its abstraction for business use. Anti-globalisation campaigners could make a point of the impact of companies' trade on the water position of other countries.

Companies active in poorer countries, whether directly as water service providers or indirectly simply by operating there, may come under pressure to contribute to the Millennium Development Goals (MDGs) for water and sanitation. In many difficult situations companies are the most effective agent for providing public services and are better resourced than governments. Where they have strong links with local communities (e.g. through employing a large labour force) companies may have a direct self-interest in promoting water and other development projects. But even where there is no obvious self-interest companies may still feel obliged to perform philanthropic actions, and risk criticism if they do not.

Where businesses operate in communities where water is scarce and many people don't have adequate

services, their use of water is bound to come under scrutiny, no matter how careful and legitimate their usage. Water represents a latent risk.

### 3.6.2. Sustainable banking

Much of the current impetus for sustainable banking (SB) dates from the Equator Principles drawn up and adopted by many leading banks in 2003. This, and the revised and expanded version just agreed (July 2006), has led a number of banks to change their lending practices, favouring clients with environmentally and socially sustainable projects.

Much of the banks' attention so far has focused on the related questions of climate change, energy security and availability of fossil fuels. They have sought ways of mitigating these problems through the development of alternative energy sources, energy efficiency, financing carbon trading and offsetting schemes, etc.

Water has so far featured little in banks' financing plans. One reason is that the menu of climate change or energy projects such as those cited above are inherently more profitable than corresponding actions in water. Many energy efficiency projects have a very short payback period, particularly with oil prices at their current levels. Likewise, carbon trading and offset schemes benefit from an artificially created market in which trading is profitable. There are analogies in the water sector based on the need for water security, avoidance of pollution, etc (e.g. water saving technology, markets in pollution permits) but these are not yet so profitable because water is cheap, and water and pollution markets are not widespread. However, there are signs of a spread in banks' concerns in water, and there are good reasons for encouraging this (Box 9)

#### Box 9. Pulp mills project, Fray Bentos, Uruguay.

Two large European paper companies recently stated their intention to build a pair of huge pulp mills on the outskirts of Fray Bentos at a cost of US\$1.8 billion, which would be the largest ever private investment in Uruguay. The plans have aroused strong protest on environmental grounds, not least from Argentina, which borders the river on which the mills would stand, and which fears contamination of the river water. A Dutch bank, which is a leading advocate of the Equator Principles, decided to withdraw its support for one of the promoter companies, and Argentina has filed an official complaint before the International Court of Justice. The bank's action followed sustained pressure from international environmental campaigners.<sup>33</sup> A second bank, which has also subscribed to the Equator Principles, is considering its position, pending an environmental impact assessment by the IFC, which is also planning to invest in the project.

Source: "Financial Times", 12 June 2006.

### 3.7. Business opportunities and win-win projects

Advocates of sustainable banking claim the following financial and commercial advantages (win-win scenarios):

- Lower levels of bad debt and problem loans due to better due diligence, spotting potentially damaging environmental factors or hostile public opinion;
- positive correlation between environmental due diligence and the quality of general credit risk assessment;
- better anticipation of outcomes for project planning and management;
- recruitment and retention of better quality and motivated staff;
- financial opportunities in new markets for products and services;
- all of which help to lower reputational risk and strengthen brand image and customer trust; new clients attracted by company's enhanced reputation.



These factors may explain the results of some analyses which demonstrate that companies that have espoused sustainability principles have, on average, a better financial performance than those that don't.

Every risk is a potential business opportunity:

"...there are sizeable business opportunities in environmental sectors", General Electric said last month that revenues from products and services gathered under its Ecomagination brand, for environmental products, rose from \$6.2 bn to \$10.1 bn. in the year since Jeff Immelt, chief executive, announced a new focus on environmental goods and services. These range from wind turbines to low energy light bulbs and from more efficient aircraft engines to desalination plants. Mr Immelt told investors there were massive profits to be made in these sectors. "With oil prices and other energy costs surging and water scarcity concerns spreading, Ecomagination makes even more sense for our investors today than it did a year ago."

Source Financial Times, June 12, 2006.

The growth of water scarcity and pollution as a strategic concern in many countries is bound to be a major driver of technological change and product innovation. So too is the need, expressed in international commitments, to reduce the massive water and sanitation service deficits in developing countries. This is creating technical and organisational challenges to all parties, to which the business sector is a big contributor. The financial community could anticipate and promote positive solutions through their portfolio choices.

## 4. Future Directions for Assessing and Managing Water-related Risks (WrRs)

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The earlier discussion suggests various possible lines of action for UNEP FI and its members for identifying and managing WrRs and the opportunities that these present. The actions are categorised as follows:

- Systematic assessment of the water footprint of firms;
- including WrRs in sustainability indicators and diagnostic tools for internal use by financial institutions;
- rating and benchmarking companies and financial institutions according to their exposure to, and management of WrRs;
- including WrRs in banks' risk assessment and testing models;
- Integrating water sustainability into all aspects of financial institution's operations, and creating incentives for staff to apply these criteria.

These are far from being a comprehensive agenda. It is to be hoped that this report will stimulate a range of other constructive ideas.

In some cases water can be “bolted on” to tools already developed for environmental and social assessment procedures. Elsewhere, new and specific methods may be required.

### 4.1. Assessment of water footprints

Assessment of a country's use of water, and the impact of its trading patterns, has received greater definition from research on the Water Footprints of Nations (Chapagain and Hoekstra, 2004). “The water footprint of a nation is the volume of water needed for the production of the goods and services consumed by its inhabitants”. The research documents in great detail the water requirements of components in national production, consumption and trade of many countries. The claim is made that “major water exporters in the world are the USA, Canada, Australia, Brazil and Argentina. The big water importers are Japan, Italy, the UK and Germany....the African continent...is a net exporter of water to the other continents, particularly to Europe.”

It may be worth considering whether such research could focus on the water components of different sectors of the economy, in countries at different stages of development, and eventually produce results useful in assessing the water footprints of individual firms.

An idea that might be considered is the production of the water equivalent of the Carbon Footprint Ranking (Box 10). Is the water footprint a sufficiently robust and unambiguous measure that could serve as the basis of the ranking? Is it relevant in regions and localities where water is plentiful? Are there aspects of water use that cannot be captured in such macro measures?

### Box 10. The Carbon Footprint Ranking

A report by Trucost, an environmental research company, into the portfolio holdings of 44 UK investment funds analysed their greenhouse gas emissions and ranked the funds by their carbon dioxide equivalent per £1 invested, or their carbon footprint. The funds in the survey account for 60% of the total UK mutual fund market. The study covered both “mainstream” funds and those with a “socially responsible” investment approach, and found the latter to be better ranked on the whole than the former on the carbon footprint criterion.

The lowest placed fund had a carbon footprint more than five times as large as the highest. The ranking of a fund depends mainly on its exposure to the 5 UK stock market sectors that are responsible for 85% of direct carbon emission, namely oil and gas, electricity, mining, steel and leisure. It is claimed that data in the study enable fund managers to reduce the environmental impact of their investments without sacrificing financial performance. At present only 40 of the FTSE 100 companies produce a quantified carbon dioxide report.

Source: Financial Times Weekly Review of the Investment Industry, 12 June 2006.

One line of enquiry would be for firms to assess the watertrail (content, use, impacts, etc) of the whole supply or value chain of production, including their materials and components, power and energy sources, consumption and use, waste disposal and recovery, etc. Some firms are developing the concept of water balances as a business tool.

## 4.2. Risks indicators and diagnostic tools

A number of sustainability indicators are in use, for various purposes, e.g. Brazilian Banco Real's BOVESPA sustainability index.; Dow Jones Sustainability Index; FTSE4Good; CERES guidelines on reporting social and environmental performance; GEMI Water Sustainability Tool.

These and others should be reviewed for their value and practicality and, where feasible, water should be incorporated. The aim should be to produce best practice water sustainability indicators

## 4.3. Rating and benchmarking

The feasibility of including WrRs in the range of factors reckoned by credit and other rating agencies should be considered.

One Financial Group has analysed the water disclosures of a number of the largest Australian listed companies, drawing on company websites, sustainability reports and company annual reports. Its aim was to assess the “water governance” of the major part of the Australian listed market, and to assess whether companies provided enough information to enable investors to make sound judgments on the likely impact of increasing water prices and growing water scarcity on their investments. The assessment looked at three issues: did the company disclose its aggregate annual water use; did the company disclose its water use by type; and, did the company disclose its water use over time. Over half the sample of companies did not disclose their water use, and these included a number with potentially major exposure to changes in water pricing and availability.<sup>34</sup>

## 4.4. Inclusion of water-related risks in banks' risk assessment and testing models

In countries and situations where water has, or is likely to have, a major macroeconomic and financial impact, there are good reasons for including WrRs in banks' risk scenarios.

In the UK the Bank of England and the Financial Services Authority are considering some harmonization of the methods used by financial institutions to stress test severe economic scenarios:

“The FSA is currently undertaking a survey of UK [financial] firms’ stress-testing practices as part of a campaign to identify good practice in the industry. The Bank [of England] believes there could, in due course, be some value in using a common set of scenarios as inputs to firms’ risk models...”<sup>35</sup>

#### **4.5. Mainstreaming WrR assessment**

Banks could examine ways of creating a structure and management philosophy for integrating water sustainability throughout the financial institution, and creating incentives for staff to adopt sustainability criteria in lending and investment practices.

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## Footnotes

- 1** More rarely, bonds can be undated, in which case they can be sold (redeemed) at the market price at the time of sale, which varies (inversely) according to the prevailing market rate of interest.
- 2** There is no concise way of referring to a company in whose shares another company invests, except investee, which is an awkward term.
- 3** Unless the borrower defaults!
- 4** Though there is evidence that some kinds of "socially responsible" financing may be as profitable as "mainstream" finance. This is further discussed in chapter 3.
- 5** E.g. "Currently SNS REAL Group has identified opportunities to invest more risk capital into small and medium sized companies and international mostly small scale projects which will serve as a catalyst for innovative sustainable development". (Press Release, SNS REAAL Groep, 24 November 2005).
- 6** Bank of England, Financial Stability Report, July 2006.
- 7** E.g. some environmental activists buy minor stakes in companies in order to be able to bring resolutions to annual meetings, as a means of pressurising management.
- 8** The issue of step-in rights. Private equity funds and venture capital funds may deliberately seek an active management role as part of their acquisition strategy.
- 9** Risk has been described as quantified uncertainty, whereas pure ignorance cannot be reduced to any metric.
- 10** "The Economist", A survey of international banking. May 20, 2006.
- 11** A good overview is contained in the OECD's recent Environmental Performance Review, Water: the experience in OECD countries. March 2006.
- 12** In England and Wales the real average post-tax rate of return on water companies' equity fell from 12% in 1993 to 6% in 2004, largely due to increasingly stringent price regulation. This has made it difficult if not impossible to raise new money through equity. One company has converted itself into a mutual not-for-profit organization.
- 13** Southern France and Ireland also share some of the features described.
- 14** According to internal IFC data, typical % rates of return are: water 5-10, toll roads 15-20, telecommunications 25-30 and power 17-25.
- 15** For this reason, bond finance is generally considered appropriate. Note that in the UK, where the returns on water company equities were originally relatively attractive, the average yield has fallen to a level that makes further equity finance difficult, due to stringent price regulation.
- 16** Not all emerging market currencies are bound to devalue – some are undervalued and a number have been steady or have appreciated against major currencies over a number of years.
- 17** The formula would need to take account of the proportion that forex obligations bear to the total costs recovered through tariffs. Where this proportion is small, an "affordable" tariff adjustment could take care of devaluation. The Camdessus Panel proposed consideration of a Devaluation Liquidity Backstopping Facility to provide countries with a breathing space while tariffs were adjusted in the wake of a major devaluation.
- 18** Many sub sovereigns are heavily indebted and national Treasuries strictly control further borrowing, especially in foreign exchange.
- 19** This is a major theme of the First Report of the Gurria Task Force on Financing Water for All, March 2006.
- 20** These are discussed more fully in the Camdessus Report.
- 21** Presentation by World Bank/MIGA at Bonn Water Conference, Dec 2001.
- 22** World Bank/OECD Vienna Conference, 2003.
- 23** Specialists refer to "pinhole risks", where ambiguities in the contract are exploited by one or other party.
- 24** Excludes the value of services involved in operating water utilities, irrigation, and pool and spa equipment.
- 25** This applies equally to firms having their own sources of water (e.g. wells, captive reservoirs, or first claim on a local river).
- 26** Munich Re: Topics, Annual Review: Natural Catastrophes 2000. 2001.
- 27** Only part of this is consumptive (losses in evaporation and transpiration), the rest returns to the water cycle and is available for other users, though may be polluted, and returned in a different place at a different time. Agriculture is also a major user of rainwater, which can be captured and stored – improvements to rainfed farming can reduce the demands of agriculture on conventional irrigation water.
- 28** SEI, 2005.
- 29** Farm Management Deposits, allowing producers to set aside part of their income for future years.
- 30** UN Water for people: water for life. 2003.
- 31** Graham Searjeant, The Times, 22 June 2006.
- 32** Ibid. The companies cited are Southern Water, Associated British Ports, P&O, BAA, Powergen, O2 and Yorkshire Electricity, while Thames Water is currently also the subject of a private bid.
- 33** The bank has declined to disclose the reasons for this decision in view of client confidentiality, but has stated that it was unrelated to compliance with the Equator Principles.
- 34** BT Financial Group, 2006.
- 35** Financial Stability Report.



# Financing Water: Risks and Opportunities

## An issues paper



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Alberto Pacheco Capella  
([alberto.pacheco@unep.org](mailto:alberto.pacheco@unep.org))

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