Water Management and Stewardship

Taking stock of corporate water behaviour

Peter Newborne and James Dalton

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James Dalton is a member of the IUCN global water team based in IUCN Headquarters in Gland, Switzerland. As an international organisation, IUCN has experience of working with several corporates (e.g. food and nutrition; cement and mining, global energy companies) in collaborative projects. Its motivation in sponsoring and taking part in this study has been the interest in developing a deeper understanding of what motivates businesses to engage, especially in water management beyond the 'factory fence'.

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Acknowledgements

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The seed of this study was sown during dinner in Stockholm in August 2014 where the authors reflected on the increasing presence of corporates at World Water Week. In carrying out this project, the intention has been to engage constructively in debate on and around this topic, through dialogue with representatives of private companies and the many other stakeholders involved. The focus has been on how corporate water management and 'stewardship' may help strengthen water management and bring development benefits. That includes taking account of the opportunities and issues to which water stewardship gives rise, as well as identifying expectations that are misplaced and steering away from unrealistic and misleading claims.

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Acronyms

AWS	Alliance for Water Stewardship
CAP	Common Agricultural Policy of the European Union
CAPEX	Capital Expenditure
CEO	Chief Executive Officer
CSR	Corporate Social Responsibility
CSV	Creating Shared Value
CWAC	California Water Action Collaborative
DEFRA	Department for Environment, Food and Rural Affairs of the UK government
DFID	UK Department for International Development of the UK government
EA	Environment Agency of England and Wales
ESG	Environmental, Social and Governance
EWP	European Water Partnership
EU	European Union
EWS	European Water Stewardship
FAMM	Monterrey Water Fund (*Fondo de Agua Metropolitano de Monterrey*)
FEMSA	*Fomento Económico Mexicano*, Mexican company
FSC	Forest Stewardship Council
FT	Financial Times
GIZ	German Corporation for International Cooperation
GWP	Global Water Partnership
HSAP	Hydropower Sustainability Assessment Protocol
IFC	International Finance Corporation
IFI	International Financial Institution
IHA	International Hydropower Association
IUCN	International Union for Conservation of Nature
ICMM	International Council on Mining and Metals
IPIECA	International Petroleum Industry Environmental Conservation Association
IWaSP	International Water Stewardship Programme
IWRM	Integrated water resources management
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
NCP	Natural Capital Protocol
NGO	Non-Governmental Organisation
ODI	Overseas Development Institute
OECD	Organisation for Economic Cooperation and Development
OPEX	Operational Expenditure
OUGC	*Organisme Unique de Gestion Collective* in France
PPP	Public Private Partnership
PRI	Principles for Responsible Investment
R&D	Research and Development
RSA	Restoring Sustainable Abstractions, in England
SDG	Sustainable Development Goal
SIWI	Stockholm International Water Institute
SME	Small and Medium-sized Enterprises
STWI	Swedish Textile Water Initiative
SWPN	Strategic Water Partners' Network, South Africa
TNC	The Nature Conservancy
UN	United Nations
WASH	Water Supply, Sanitation and Hygiene
WBCSD	World Business Council for Sustainable Development
WIN	Water Integrity Network
WWC	World Water Council
WWF	World Wide Fund For Nature/World Wildlife Fund

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Summary

Coal fired electric power plant © Shutterstock/ESB Professional

Summary

Companies are increasingly encountering **disruption** to their operations due to problems of water supply, as well as floods. Multinationals in sectors that use substantial amounts of water may now *expect* to encounter water supply difficulties in their operations and supply-chains. The availability of water for a range of water users is threatened in many places by a combination of increasing demand and climatic variability - longer periods of dryness and more erratic patterns of rainfall - as well as problems of pollution affecting water quality. The issue has become *when and where* local and regional water difficulties will arise, and *what* companies (and other actors) can do about them. As the Action Plan of the UN and World Bank-led High Level Panel on Water notes: 'Pressure on water is rising, and action is urgent'.

In this context, companies are called upon to improve their management of water including adoption of standards of '**water stewardship**' for responsible water management respecting *shared use* of water between water users in catchments and river basins, beyond just individual *own use*.

The evidence gathered by this study suggests, however, that there has been **little evolution, to-date**, from business-as-usual. Multinationals are taking time to comprehend the diversity of water-related contexts in which they are operating. Some corporates – a few leaders - are beginning to take steps to change the way they manage water, but they are mostly investing in water infrastructure within their own plants/premises. Recycling, re-use and other technical means of improving the efficiency of water use (reduction of volumes of water used per unit of production) are helpful as far as they go. Yet stewardship, according to international guides/standards, goes beyond efficiency at any individual site to include an understanding of, and response to, water challenges within a catchment, as well as engagement in collective action with other water users and stakeholders within the catchment. Companies need to be aware of, and adaptable to, water issues 'beyond the factory fence'. The examples of the greater level of engagement in collective action are, currently, exceptions to the general rule.

Corporate engagement beyond the factory fence does not mean just developing a portfolio of **corporate social responsibility (CSR) projects** with promises to give back ('replenish') water withdrawn from rivers/aquifers, when the key issue is whether and how much water should be taken out, by whom, in the first place. Current corporate targets for replenishment appear to be designed to protect existing water allocations and preserve existing business practices, instead of exploring new business models.

Many of the current water projects beyond the factory fence are funded by the philanthropic/charitable arms of corporates aimed at showing they are responsible 'societal players', although on a conditional 'if-and-when-the-company-feels-like' basis and with an eye on the rewards for the company in terms of its own 'licence to operate' (an entitlement to its existing water allocation at any given location, with the possibility to withdraw more). Based on the example of two large corporates which are leaders in water management, it seems that the further from the factory fence an action to improve water management in the catchment is located, the more likely it will be supported by a charitable foundation, while the activities of the core for-profit arms of companies typically come in the 'own use' category. That makes for a weaker link between businesses and impacts and raises the question of to what extent the 'corporate-DNA' of companies has evolved from **business-as-usual**. It is significant also in that the amounts donated by charitable foundations are typically modest when compared with the profits of the commercial company/group, especially of multi-nationals.

As for *major* water infrastructure projects beyond the factory fence, companies generally bring their expertise, not finance - with the **finance** coming from public sources. Where substantial private finance does go towards funding such major infrastructure, it is usually (typically) under the 'umbrella' of a public guarantee.

An estimated 80% of total global water use is consumed in food production, or more when water in both surface and ground water bodies ('blue' water) and water in soil and plants/crops ('green' water) is taken into account. That makes the role of **farmers** key. Companies operating as food traders, processors and retailers who aspire to be good water 'stewards' are asked to look back along their supply chains to understand how farmers are managing water, and to find ways to encourage them to secure the sustainability of agricultural products and food ingredients - 'asked' because water stewardship is a voluntary code. The question arises how far there is, currently, commercial room for that. A major barrier to corporate water stewardship is the downward pressure on food prices which makes it difficult for farmers and other businesses in the food supply chain to devote time and resources to good water and

land management. For water stewardship to work, private companies and other actors need to be able to capture and internalise those costs. So, while the business *concern* is evident - all company representatives talked of water problems already encountered and future difficulties being assessed – in practice companies are struggling to put numbers on water risks to support the business case for *action*.

An alternative option is public sponsorship of stewardship – the funding by governments of direct payments to farmers to encourage stewardship. One example of this is the '**country stewardship**' scheme in England under the European Common Agricultural Policy. This is a voluntary, although incentivised, scheme. Farmers are not obliged to participate, but, if they do, they receive payment, based on income foregone in carrying out the agro-environmental actions in question. Governments in low-income countries will rarely have the resources to provide subsidies – without, that is, external support from donors.

In emerging markets such as Mexico, Brazil, South Africa and China, new rules and limits on water withdrawals are being introduced in places where population density and climatic conditions combine to intensify water stress. Already, **reform of water allocation** arrangements is a 'dynamic policy area', even in countries where the general public may be surprised to hear there are problems of water scarcity. For example, in England, the Environment Agency (EA) is progressively applying its scheme for 'restoring sustainable abstractions' in order to reform a system which is no longer fit-for-purpose - a 'wake-up call', based on science, not alarmism. As regulator, the EA has legal powers, if necessary, to impose a reduction in the volumes of water users withdraw (with compensation, except in cases of 'serious' damage to the environment). Changes to regulation in developing countries may be slower and may be patchily/weakly enforced, but many of those countries also face growing water demands and climate variability which means that governments need to review and reform their water abstraction regimes.

The days, in other words, of planning a new plant or procurement first, and then thinking about water availability later – assuming a water authority will issue a licence to abstract - are over. Companies that review the siting of their operations and reconfigure their supply chains, so as to adapt the way they source agricultural and other inputs, can get ahead of their peers. As the World Bank has noted, trade becomes distorted when arid areas continue to produce water intensive goods at ever-increasing financial and social cost, contrary to their '**natural comparative advantage**'. Investing in drip irrigation and other on-farm techniques for achieving water use efficiencies may well be an attractive option for businesses in the search for rapid site-based outcomes, but the impacts of those actions need to be understood in terms of water within the wider social, economic, and hydrological catchment. Reducing water use in farm and field does not make growing water-thirsty crops in areas of intense pressure on water resources the sensible option. *What* is grown *where* (choice of crops taking into account water availability) is as important as *how* it is grown (water use efficiency). Major buyers, whether retail chains or traders of agricultural commodities, could usefully shift, over time, their procurement of water-thirsty agricultural products to areas where there is less pressure on water resources. In heavily water-stressed catchments where there is intense competition between water uses in contexts of changing climatic and socio-economic conditions, companies need to be ready to discuss/negotiate and accept caps or reductions in water withdrawals, since in those circumstances trade-offs and compromises will often be necessary.

Adaptation to these changing conditions means looking beyond the short-term. **Long-term sustainability** is a specific objective of water stewardship. The current water behaviour of most companies currently reflects a short-term and narrow vision - 'narrow' in the sense that it is not inclusive of other stakeholders.

The tendency is for corporate documents and statements to speak in terms of 'win-wins' for all and, during this study, company representatives mostly avoided talking about trade-offs. Yet, water resources governance involves management of the needs of different water users including competing uses. Arguing for win-wins becomes more difficult in catchments/basins with intense pressure on water resources where water is already heavily abstracted and access to water is keenly contested. In these situations there are likely to be **trade-offs** which can demand expense or detriment to business interests. Solutions will often be built on the basis of negotiated agreements which embody compromise. Some company representatives consulted during this study were ready to consider the cases where trade-offs in water allocation/access are necessary. Recognising that there can be a tension and conflict between collective and individual goals is not saying that there can in no circumstances be win-wins - in those where trade-offs are not necessary.

The question arises how companies effect the evolution from own use to shared use. In 2015, the Carbon Trust pointed to businesses simultaneously living in two realities: the need to meet 'short-term business goals' and the recognition of an 'uncertain future' where they need to address sustainability challenges. What they do not see is the pathway from

one to the other. Companies will need to **transition** from the status of water, currently, as a medium risk, but low priority, to (increasingly) a medium (or high) risk and medium (or high) priority.

The future of corporate roles in water management will depend, in great part, on how corporate cultures evolve under the effects of the **drivers** of corporate 'water behaviour' (or, in diverse contexts, 'behaviours')**.** The drivers which are *intrinsic* to companies – their mission/purpose and culture/values, as well as corporate finance (structure of balance sheet and how much is taken out in dividends) as well as sector/industry and nature of operations - seem to be taking effect slowly. At the same time, the *external* drivers brought to bear by regulators, investors and consumers do not seem to be significantly influencing corporate water behaviour at present.

A further gap, currently, is the lack of monitoring and evaluation (M&E) of water stewardship initiatives. Corporate case studies need to carry out M&E to transparently demonstrate the learning from water management and stewardship actions, measuring performance against indicators. Instead of promotional literature providing 'snap-shots' for marketing purposes including some extravagant claims, more independent evaluations and detailed in-country studies are needed. Without good **information** to record and assess what is working and what is not, the concept of water stewardship will be undermined rather than strengthened.

The availability of information relies to a great extent on voluntary **disclosure**, e.g. to CDP Water. Alongside that, there is surely a case for establishment of compulsory information access, e.g. stock exchange rules obliging listed companies to arrange for independent verification of sustainability reports. Where voluntary disclosure fails to deliver sufficient reliable information, the arguments in favour of mandatory reporting will become much stronger.

Reporting can be backed up by **scoring**. The Alliance for Water Stewardship (AWS) standard provides for certification of water stewardship initiatives - the core and advanced ('gold' and 'platinum') levels - while the business-to-business guide of the World Business Council for Sustainable Development (WBCSD) and the steps recommended by the international NGO, WWF, are not (at least to-date) accompanied with published reports of which companies have progressed to which levels of water stewardship.

Much depends on attitudes and approaches to **climate change**. In its September 2016 report, the Blackrock Investment Institute, a major US global investment manager, notes that 'investors can no longer ignore climate change'. 'The economic impacts', it says, 'are not just in the distant future'. 'More frequent - and more intense - extreme weather events such as hurricanes, flooding and droughts are already affecting assets and economies'. Yet, Blackrock adds:-

> 'Governments, investors and consumers have been slow to appreciate climate factors … Markets tend to focus on the shark closest to the boat. Risks we can see, especially visceral ones, occupy most of our attention. Contentious elections, referenda and monetary policy decisions dominate headlines. The effects of climate change are less visible and perceived by many as distant. This leads to a bias toward inaction. Bottom line: we believe climate factors have been underappreciated and under-priced'.

To lever change in corporate practices, **investors** can act to exert pressure on companies. A group of fund managers – big global names – have, for example, recently combined to challenge the corporate governance of the UK company, 'Sports Direct', for non-compliance with labour laws. The question arises how far investors, as well as occasionally sanctioning *bad* practice as in the Sports Direct case, are systematically pushing forward *good* practice. CDP reports an 8-fold increase in 6 years in the number of companies submitting data relating to water management, but notes that this is work-on-progress and 'in some cases, the quality of data leaves a lot to be desired'. Companies and countries that innovate and 'take their climate change medicine now, rather than later' can, Blackrock says, 'achieve a stronger competitive position in the long term versus [their] peers'.

In some cases where companies are not advancing through the steps in the water stewardship standard/guides as much as promoters and commentators of water stewardship have expected, that is the deliberate choice of the companies concerned, because they are wary of engaging in collective action beyond the factory fence. The shift to collective action is demanding – a **big step up** in terms of the stakeholder-inclusive processes that water stewardship initiatives are expected to put in place in order to achieve social, economic and environmental objectives. The bar, in other words, has been set high. That seems to be deliberate, but it means that more attention needs to be paid to identifying the niche role(s) of companies (shareholder-owned for-profit companies and others). Water stewardship brings with it the explicit responsibility of each actor to contribute to the public good, a central tenet of the concept which raises a question: where there is a tension between individual and collective interests – where the need for a trade-off presents itself – will a given corporate (or other water steward) pursue its individual objective or opt for collective benefit?

That question goes to heart of the *raison d'être* of companies. How far businesses have a responsibility to society is a contested issue. Company lawyers disagree whether the **purpose of a corporation** is to serve the interests of shareholders to the exclusion of others (as long as the company operates within the law), or whether company directors should, or can, take account of other stakeholders, including local communities. When and how is a company ready to go beyond its individual interests to work for collective ones? Some company laws and company constitutions are more attuned than others to inclusive development. In relation to shareholder-owned for-profit companies, the question arises what constituency or constituencies, amid the drivers of corporate water behaviour, are most important? Is it outreach to shareholders/investors and the stock market, outreach to beneficiaries of philanthropic projects, outreach to policy makers and political decision-makers, or outreach to the general public including customers – purchasers of the company's products? Maybe the answer is: all those constituencies. But what about the tensions between the interests of those constituencies? Based on this study, it is clear that the efforts to make water stewardship work in practice will be better served by recognition of what corporates, and particularly shareholder-owned for-profits, are ready, and not ready, to contribute - a debate, in other words, that has its commercial and business (and legal) 'feet on the ground'.

One reason for the entry of private companies into water stewardship is the slowness – or, in the eyes of some, fundamental failure – of governments to discharge their responsibilities for water resources management - the 'big picture' of multiple actors and stakeholders discussing and negotiating over water access within national territories and beyond. The corporates and other actors (NGOs, donors) leading water stewardship initiatives are, in other words, aiming to show how to make up for the '**public governance gap**'. Private companies should surely not be looking to *fill* the public governance gap because that would be entirely to take over the role of governments whose responsibility it is to set out and oversee the systems governing water resources. Instead, through water stewardship, the private sector and civil society (large companies and NGOs) are exploring afresh which roles and responsibilities in *implementation* of water resources management may be *delegated* to them.

Women harvesting rice, Vietnam © Shutterstock/Hoang Tran

Under the concept of water stewardship, some companies are participating in negotiating and bargaining - taking part in processes to determine water policies, including priorities for water resources allocation. Some corporates and NGOs were previously involved in this form of policy engagement under different guises - '**lobbying**' and 'advocacy'. To the extent that water stewardship initiatives *redefine* priorities for water allocation, corporates and NGOs will be going beyond their brief unless government has approved a delegation to do that. This is an important and often contested area in practice. Is a given delegation of roles/responsibilities clear? Has it been made legitimately, e.g. in accordance with the permitted powers of the relevant public authorities? Are the providers of water stewardship 'services' accountable to water users (the public)? For large companies with big budgets for public relations, water stewardship provides a convenient flag under which to conduct such lobbying. This is arguably bargaining via the 'back door' of delegation. They may, further, make inroads into the functions of government where water stewardship initiatives set out local allocation rules and procedures defined by processes that by-pass government (no delegation). Is this the 'redefined water sector' as referred to by one participant at the Financial Times 'Water Summit' in October 2015, or policy capture? As noted above, there is a danger that the role of government in leading water reforms is side-lined. Leaving water stewardship initiatives to drive bargaining raises real concerns over legitimacy.

Other companies are holding back from entry into the public-led realm of water resources management and are restraining their activities to private investments in water infrastructure within their own plants/premises as noted above. The aim, however, of promoters of water stewardship (for example, AWS and WWF) is to encourage companies to engage beyond the factory fence. Industry groupings such as WBCSD and the CEO Water Mandate also propose this broader level of engagement to their membership, with some deliberation and with caveats, e.g. the importance of **avoiding** '**policy capture'**.

Donors are, meanwhile, aiming to support water stewardship as a catalyst for reviving government action. According to this '**catalytic**' model, the companies and other actors taking part in those water stewardship initiatives are seeking to encourage the government to 'pick up and run' with the activities that are created. Where the purpose of stewardship programmes is to catalyse government involvement in this way, rather than side-line it, there will be openings for collaboration. The aim will surely be for governments to connect with the efforts and energy generated. In particular, the finance that donors provide to water projects in developing and especially low-income countries is important for over-stretched national treasuries whose funds are liable to being applied to priorities other than water resources management.

This study found that a stronger lead from national governments is needed to support water stewardship as well as implement **integrated water resources management** (IWRM). As noted above, governments of developing countries need to tackle the challenge of reviewing and reforming their water abstraction regimes so as to prepare for systems of governance of water allocation capable of operating in contexts of heavy abstraction and climate variability. This is time-consuming, but necessary. It involves public sector agencies, alongside corporates. The English example illustrates the challenge of a transition from a regulatory system which is no longer fit-for-purpose to a reformed system. Where public sector leadership is currently lacking, the priority must be to support greater government capacity and do so in a sustained manner. There is no short and easy way out of the public governance gap.

A key question is whether the aim of water stewardship initiatives is actually *stronger* government, or *smaller* government. Do proponents of water stewardship genuinely want to see government 'pick-up' of water stewardship initiatives, or alternatively will they be content for significant management decisions to be removed from the political arena and public debate? Currently, there seems to be a substantial **disconnect** between the efforts led by governments under Goal 6.5 of the SDGs (implementation of IWRM) and the water management and stewardship initiatives of private companies. Initiatives such as the International Water Stewardship Programme (IWaSP) and other water stewardship initiatives designed to be catalytic constitute early-stage exceptions, for now.

NGOs are also playing a key role in promoting water stewardship. For large NGOs, water stewardship provides both an opportunity to push companies to be better water managers (advocacy) and a lucrative market in corporate funds for projects. There is a danger of too many water stewardship actions that are supported by funding from philanthropic foundations, with too few mobilising funds out of core business budgets. The due diligence processes established by NGOs to manage their interactions with corporates can usefully encapsulate this distinction. More collaboration, as opposed to competition, between NGOs in water stewardship initiatives would align better with the philosophy of collective action. As compared with competing for corporate funds, NGOs could usefully work together in **advocacy and campaigning** to push companies to invest more in long-term sustainability, for example following a 'curating' approach where a coalition of companies supports a platform for policy reform led by an NGO 'curator' whose leadership they accept. It makes more sense to have groups of companies acting pro-actively in this way

rather than CSR projects by individual companies. Companies may at first hesitate to cede leadership to an NGO/civil society curator, but, if they are so determined to retain control, why are they contemplating entering into partnerships with NGOs in the first place? That might suggest that those partnerships do not involve a ceding by companies of control/influence and that the companies enter into the partnerships more for brand and reputational purposes than as collaborative contributions to effective water resources management. One international commentator noted that there is 'a danger of relationships between corporates and NGOs that are opaque – too close and sealed for there to be learning'. Without more transparency, stewardship risks being discredited.

As another potential driver of changed corporate behaviour, evolution in **accounting practices** would help to encourage water stewardship. A common progressive international accountancy 'rule-book' reflecting water and other natural assets and liabilities/risks could benefit significant water-using business sectors across all geographies.

As for progress towards wider benefits for society and the economy including poverty reduction and protection of the environment, despite expressed good intentions, it is not clear that there is, as yet, a critical mass of companies engaging in water stewardship to achieve these goals and it is generally too soon to make an assessment of the success or otherwise of specific water stewardship initiatives in terms of their **development impacts**.

The question arises: which companies, and which governments and NGOs in support, will make the big step up to water stewardship, and when? As noted above, business *concern* is not enough - the concern needs to be translated into *action*. The year 2017 will mark the 30th anniversary of the report of the Brundtland Commission on '*Our Common Future*', and, as Volans points out in its September 2016 report, this is a timely opportunity to critically reflect on what has worked - and what has not. Volans argues for 'exponential' (as compared with incremental) change and says:-

> 'Achieving exponential progress will require a scale of collective efforts rarely seen outside wartime conditions. We call on business leaders and the wider Sustainability Industry to embrace a breakthrough agenda … that … understands business as part of wider social and natural systems' and 'accepting that many current **business models** will become obsolete'.

In relation to water and natural resource management, that means companies need to show how they are changing their business models and practices - and do so soon.

Plastic rubbish pollution in ocean, Malaysia © Shutterstock/Rich Carey

1. Context

1.1 Introduction

Companies are increasingly encountering disruption to their businesses due to water scarcity, floods, and interruptions to water supply. Multinationals in sectors that use substantial amounts of water may now *expect* to encounter water supply difficulties in their operations and supply-chains. As a result of the failure of cotton crops in Texas during the 2011 drought, one US clothing chain reportedly suffered a 22% cut in full year profits and another a 36% decline in net income in one quarter[1]. The estimated economic cost of the 2011 floods in Thailand was US$45.7 billion[2], with impacts on the global supply chain for hard disk drives into 2012[3]. The issue has become *when and where* local and regional water difficulties, or 'risks', will arise, and *what* companies (and other actors) can do about them. The supply of water to a range of water users is threatened in many places by a combination of increasing demand and climatic variability - longer periods of dryness and more erratic patterns of rainfall[4] - as well as problems of water quality due to the presence of pollutants[5]. As the Action Plan of the High Level Panel on Water notes: 'Pressure on water is rising, and action is urgent'[6].

In this context companies have become increasingly active in debates regarding water management. Company representatives arrive in numbers at the annual World Water Week in Stockholm and are increasingly active in sessions there[7], as well as appearing on panels at other water-related international conferences and meetings. The World Water Council and the OECD note that 'companies have been outspoken' in their 'warnings of water risks to their operations', which, if not managed, will 'pose a threat to economic growth' (WWC/OECD, 2015, p. 9). Impacts are already being felt. Based on information supplied in company disclosures, the CDP[8] records that 1,226 companies suffered detrimental impacts to their businesses from water challenges with a financial value totalling more than USD2.5 billion in 2015 (CDP, 2015), and a staggering USD14 billion in 2016 (CDP, 2016). A donor representative interviewed during the course of this study commented that: 'Everyone agrees that there is a strong link between water and the economy'.

The nature of corporate water use varies from sector to sector and company to company. Most visible in these debates are the companies which operate in significant water-using sectors - for example, food and beverages, chemicals, energy, mining and manufacturing. Sustainability specialists in those and other areas of business[9] are working to put the case to colleagues for more investment in water management, especially water efficiencies, and looking to their suppliers to do the same. Agricultural supply chains are particularly important because agriculture accounts, globally, for a large proportion of water use, an estimated 80%, in the production of food, or more when water in both surface and ground water bodies ('blue' water) and water in soil and plants/crops ('green' water) is taken into account[10]. In deciding how to respond to water risks, some companies have advanced in their plans, whilst others are still at an early stage.

Among water debates, initiatives in corporate 'water stewardship' have gained increasing attention. As well as improving water use efficiencies in their own plants and premises, some companies are engaging in dialogues with other water users in the catchments in which plants/operations are located. This involves looking 'beyond the

1 Source: http://www.bloomberg.com/news/articles/2011-06-30/texas-cotton-farmers-may-abandon-record-acres-because-of-drought

2 World Bank, 2011.

3 Carpenter, 2012.

4 Future temperatures are well understood by climate science. Temperatures are increasing, causing more moisture to be held in the atmosphere, thereby giving rise to more intense precipitation events. Future rainfall is not, however, well understood by climate science. Where and when rains will fall is difficult to predict.

5 Water quantity and water quality issues may of course be related, e.g. lesser volumes of water, less dilution of pollutants. Water quality is a particular concern for food and beverage companies, including those who sell bottled water, as discussed in Section 3.1.

6 The Action Plan calls for governments, societies and private sector to 'change the way they use and manage water' (High Level Panel, 2016, p.3).

7 Data provided by the Stockholm International Water Institute, as organiser of World Water Week, shows that the number of sessions that are co-led by private companies tripled between 2011 and 2015 (and a subsequent study could usefully conduct analysis of the change in private sector involvement prior to 2011, although data is not readily available at the level of detail required before 2009).

8 Formerly called the 'Carbon Disclosure Project' but, with its broader remit including water, now 'CDP'. Launched in 2010, CDP's water programme represents, it says, the interests of 617 investors with US$63 trillion in assets, and 18 multinational organisations with a combined procurement spend of US$214 billion (CDP, 2015).

9 Including persons consulted during this study.

10 The representative of a big multinational foods company estimated that 95% of water consumed in its products occurs in its agricultural supply chain. By 2050, manufacturing is likely to increase water withdrawals by 400% from 2012 (OECD, 2012).

factory fence', either one-to-one or in small groups, or through bigger groupings aimed at bringing together water users from a range of use types, e.g. agriculture, industry, energy, urban/municipal. Companies may be motivated to engage in improvements to water management for a number of reasons, typically a combination of issues relating to risk, revenue, and reputation as discussed in this paper.

The purpose of this paper is to 'take stock' of the discussions, based on what private companies are doing - and not doing, or doing less - in relation to water management and particularly in relation to 'water stewardship'. These pages do not try to trace the history and origins of corporate water stewardship[11]. The subject of discussion here is multi-faceted and complex. In 'taking stock' of the debate, this 'discussion paper' asks as many questions as it attempts to answer – hence its title.

A variety of actors have been interviewed - including providers of services (technical, financial) to companies, and representatives of government, NGOs and researchers/academics, as well as independent consultants and commentators. Based on the range of persons consulted, together with reference to the available documentation, this paper aims to map the 'landscape' of debate and action, to date, in corporate water management, recognising the extent to which this is possible in one document, and to the extent to which activities are visible and verifiable amid the abundance of marketing and promotional literature.

Whilst it is difficult to generalise across different sectors and different companies' operations in different places, some patterns have emerged from this study. With the UN Sustainable Development Goals (SDGs) calling for stronger private sector engagement and commitment to a sustainable future, this report suggests ways in which corporate water management and stewardship may contribute to more effective water resources management. That is a systemic challenge. Improved water management and governance is, according to SDG Goal 6.5, to be achieved through implementation at all levels in countries (and through trans-boundary cooperation where appropriate) of 'integrated water resources management' (IWRM) - by 2030. A UN report in 2012 noted that the governments of two-thirds of UN member countries have set out national IWRM plans[12] which they are expected to implement (to the extent they have not done so already)[13].

As for water stewardship initiatives, these are relatively new, so it is generally too soon to expect that many tangible development outcomes have emerged to-date out of the collaborations they are leading. The question is how far those water stewardship initiatives have progressed to-date.

Finding collaborative solutions to water management challenges is what is intended to take place as part of government-led processes of IWRM. The slowness of IWRM – and, in the eyes of some, its fundamental failure – in resolving water problems may be one of the reasons for the entry of private companies into water management debates and initiatives. Corporate water stewardship has grown, in part at least - one international water specialist noted - out of failures by governments to adequately regulate water allocation and water use - the so-called public 'governance gap'. In developing countries, that is due, in part at least, to a lack of resources and capacity (in many cases, documented). Water stewardship, and in particular corporate water stewardship, can (according to another person consulted during this study) be a 'politically-acceptable way to bring pressure to bear on governments to improve their act'. Corporates like to be nimble/agile (or at least like to see themselves as such[14]) so companies and groupings of companies see part of their role as contributing to better and faster decision-making (as they say, 'to drive action') so as to broadly improve water resources management. In this paper, the term 'water management' is particularly used in the context of actions and perspectives of corporates while 'water resources management' refers to system-wide issues including at river basin and national scales.

This paper therefore considers the potentially catalytic role of water stewardship, the idea that corporates are leading water stewardship initiatives that governments can and will 'pick up and run' with. Other participants in this debate

11 At least, not in a comprehensive or systematic manner. An example of a historical perspective is where WWF describes in Section 3.7, the interaction between actors in the Kafue River basin in Zambia in terms of its evolution as a result of stewardship.

12 The UN Environment Programme (UNEP) reported in 2012, on behalf of UN Water, on the results of the survey of the status of water resources management (UNEP, 2012). A questionnaire was sent by the UN Environment Programme (UNEP) on behalf of UN Water to the 192 member countries of the UN on the official listing. 134 countries (70%) responded with a 'fairly even distribution among geographical regions and Human Development Index groups'. This survey showed that 84 of the 133 countries responding (65%) had developed (in some shape) national IWRM plans.

13 The UN has meanwhile established a multi-stakeholder process, via an Inter-Agency and Expert Group to develop indicators to monitor progress towards the SDG goals and targets as well as inter-linkages between them: http://unsdsn.org/wp-content/uploads/2015/09/150816-Identifying-inter-linkages-SDSN-Briefing-for-IAEG.pdf

14 One person consulted referred to cases where, on the contrary, corporate decision-making is slow and lacking in progressive thinking, following heavy hierarchies and long chains-of-command, and thereby unable to rapidly change direction.

may see this differently. For them, the claim may be that corporations can succeed where governments fail, which means that they do not look to governments to enable water stewardship activities, but look to business/companies to assume new roles in substitution for functions that governments normally carry out. This is discussed later in this paper (in Sections 5.3 and 6.2).

Commenting on the involvement of private companies, one presenter at the 'FT' (Financial Times) 'Water Summit[15]' held in October 2015 talked about the recently 'redefined water sector'. A 2015 report similarly referred to a 'shifting paradigm'[16], whilst an international specialist on corporate water strategies has talked of a 'rapidly evolving 'ecosystem' of water investors, entrepreneurs, NGOs, private sector initiatives etc.' (Sarni, 2011). The question arises whether and how the water sector has been 're-defined' and what has changed as a result of corporate involvement - with what implications?

A key proposition put forward in this paper is that actions by private companies as part of water stewardship need to connect with government-led plans for implementation of IWRM – as well as other government initiatives for improving water governance. Despite the governance failures and capacity gaps, governments are, in principle, responsible for setting and overseeing the legislative and policy frameworks within which national systems of water resources management function. The core of that water resources management role is the determination of rules and procedures governing water allocation across catchments and river-basins, for different uses. IWRM, if adequately planned and implemented, can provide appropriate institutional and procedural means for governance of water resources (Smith and Jønch Clausen, 2015). In the face of increasing climatic variability, the principles and processes governing water allocations including abstractions need to be flexible to take account of annual and seasonal differences. Water is not like carbon. In managing water, 'attributes such as geographical location and timing are important' (Sarni, 2011, p.243).

Similarly, corporates need to look for ways to adapt their operations (production, storage and distribution of goods and services) to fit the changing conditions, including oscillations in water availability with peaks and troughs in supply. An example referred to during this study is distillers of alcohol who can arrange to distil more during the wetter months, with bottling maintained during the dry months. For other companies, other changes will be necessary, for example innovation in products; decisions on the siting of operations which take account of water availability[17], and managing their water 'risks' through agile choices regarding supply chain sourcing.

Four years have passed since the special issue of 'Water Alternatives' in October 2012[18]. The introduction and synthesis article to the special issue noted that there had been, up to that time, few certifications under international water stewardship standards and few independent evaluations and research studies of water stewardship initiatives (Hepworth, 2012). The present paper returns to the subject to see how it has evolved[19].

The observations of the people interviewed during this study have been the principal source of information, alongside documentation consulted[20]. Their words are recorded in this paper to describe (in their perceptions) what is taking place, and each person's perspective on water management. The views and observations of the authors of this report are then added, taking care to differentiate the statement in the key informant interviews from the commentary. The companies consulted are mostly (not exclusively) multinationals headquartered in the US and Europe, including prominent participants in the corporate water management and stewardship debate. Many of them have extensive global supply chains, and operate in global markets.

15 FT Water Summit 2015: 'The New Bottom Line: Collaborative Solutions for Growth'.

16 CEO Water Mandate (undated), 'Serving the Public Interest: Corporate Water Stewardship and Sustainable Development', CEO Water Mandate, WWF and WaterAid.

17 Note that this may also lead to the selling or abandonment of certain assets, effectively taking them off the company account due to water risks, or other environmental challenges, i.e. repeated pollution incidents and fines, revoked water licences. This may not therefore resolve a problem on the ground, but it may reduce the reputational risk to the divesting company.

18 Water Alternatives 5 (3): http://www.water-alternatives.org/index.php/tp1-2/1881-vol5/224-issue5-3

19 The study by Sarni of 'corporate water strategies' was published in 2011 including in 'Part II' a survey of water use and risks/opportunities in different sectors/industries (Sarni, 2011 - pages 149-231 in particular).

20 Including documentation made available at/around events where the role of private companies in water management has been discussed, e.g. World Water Week at Stockholm, the Financial Times 'Water Summit' held in London in October 2015 and other major international conferences and specific gatherings by corporates themselves and their partners/brokers.

As well as recording the testimony from the interviews, this paper particularly reviews a number of aspects of this discussion:-

- **water stewardship**: what is 'water stewardship' and what are the aspirations of water stewardship as put forward by its proponents? How is it being interpreted and applied by companies and other actors? The term 'corporate water stewardship' (in particular) highlights water stewardship carried out by companies, whilst other actors carry out 'water stewardship' (in general).

- **roles**: who does what? Which actors – private companies, governments, NGOs - are to carry out which roles, individually or collectively, at site, catchment/basin and national scales? In particular, what is the part played by the private sector - what are companies 'bringing to the table'. Where do companies fit in efforts to achieve effective water resources management, system-wide? Part of the rationale of greater involvement of corporates in water management is thought to be the financial and other resources (human and technical) that they can mobilise. Are companies doing so, and what is the potential, and limits, of their contribution to water stewardship?

- **motivations**: what are the motivations of companies in engaging in water management and stewardship (as far as these can be ascertained)? Related to that, what is the likelihood of enduring corporate interest in water stewardship initiatives? Much of what corporates are asked to do in relation to water stewardship is framed in voluntary codes, rather than as mandatory requirements.

- **progress/gaps**: what is the current status of corporate water management and stewardship? What evolution in business practice has occurred to-date, or, alternatively, how much is it a case of 'business as usual'? What gaps are identifiable which could hinder the prospects for water stewardship initiatives producing wider benefits for society, the economy and the environment in the medium and long, as well as short term?

- **water stewardship and IWRM**: how do water stewardship initiatives and IWRM connect, or not?

- **recommendations**: based on this study, what suggestions may be made to corporates, to governments, NGOs, investors and donors in order to strengthen water stewardship and to contribute to more effective water resources management, including addressing the problem of increased demand combined with climatic variability?

Hepworth (2012) notes that one of the '… questions facing this new corporate engagement on water policy…' is '… whether current models of … economic development … can be maintained in the face of absolute limits on resource consumption'. For companies, that means identifying ways of doing business that are profitable *and* sustainable in the long term.

First, however, the above reference to effective water resources management and a 'redefined' water sector invites a first look at the roles played by different actors, in particular the private sector, and what effective water resources management means.

1.2 Essential elements of effective water resources management

Table 1 sets out the essential elements of effective water resources management as proposed by Perry, 2013 and adapted for present purposes.

The distinction that Perry is making is between *good* management and *effective* management. 'Good' management is, he says, for the interested parties in any given country or context to judge, including the policy choices to be made between competing uses. Perry, highlights the building blocks necessary for 'effective' management to achieve outcomes consistent with expressed policy.

Perry contrasts the identification of the elements shown in Table 1 which are objectively required for a water resources management system to function on the one hand, and the subjective process of promotion of, and advocacy in favour of, a particular policy approach applying to that system on the other hand.

Table 1. Essential elements of effective water management

Element		Definition of element
A.	***Accounting*** for the available resources	Clear and publicly available knowledge of resource availability in time and space.
B.	***Bargaining*** through the political process to determine priorities and allocations	Policies governing water resources development, including assigning priorities among users for the available water.
C.	***Codification*** of the agreed priorities and allocations into rules, statutes and laws	Translation of those policies into allocation rules and procedures such that the water service to each sector or user is clear under any hydrological circumstance.
D.	***Delegation*** of implementation to appropriate institutions and agencies	Defined roles and responsibilities for provision of all aspects of the specified water services.
E.	***Engineering*** to create the necessary infrastructure to deliver the agreed services	Infrastructure (built and natural*) to deliver the specified service to each user.
F.	***Feedback*** (from monitoring and evaluation)	The process is continuous and to a degree circular.
↑	**- as well as FINANCE* for the above elements**	↑

Source: as adapted from Perry, 2013 (items added to the Perry framework are marked with an asterisk).

As for the objective requirements of a functioning water resources management system, while 'the actors, the rules, the institutions and the [nature of the] infrastructure involved in effective management vary widely – from democratically-elected parliaments to groups of all-male village elders, from computer-controlled gates to stop logs … the functional structures [as set out in Table 1] are remarkably similar' (Perry, 2013, p.12).

As for the subjective processes of promotion and advocacy of particular policy approaches, Perry cites examples of policies such as 'participatory management', 'stakeholder involvement' and 'treating water as an economic good' as per the 1992 Dublin Principles (UN, 1992), as well as other means that are proposed to help resolve water problems which come out of 'international conferences … web discussion forums and academic journals'. Water stewardship is one such policy approach.

The Perry framework provides: 'an initial comprehensive basis for evaluating the current state of water resources management in a particular area' (Perry, 2013, p.7). It will be used in this paper as an aid in answering, the following questions:-

For effective water resources management:

1. What sort(s) of contribution may private companies make to water resources management - system-wide (across catchments/basins and countries)? i.e. what is the role(s) of corporates and how does it fit in the 'big picture' of water resources management with its many actors and stakeholders and its challenges and complexities?

In relation to **water stewardship** as a policy approach, a second question is asked in this paper:

2. What is the current status of progress by companies against the international guides and standards to water stewardship? Those guides/standards are described in Section 2 and, to help answer this second question, a further analytical framework is proposed in Section 2.9.

As regards the actors who are involved in the essential elements in Perry's framework in Table 1, the starting point is determined as follows:-

- Governments will lead 'Bargaining' and carry out 'Codification'. As noted by Perry, representatives of special interests such as 'business lobbyists' and 'environmentalists' will look to involve themselves in the Bargaining

Lago Moreno, San Carlos de Bariloche, Argentina © Claire Warmenbol

and will want to be consulted during the process of Codification, but, as noted in Section 1.1, it is governments who are responsible for setting and overseeing the legislative and policy frameworks within which national systems of water resources management function, including the principles and procedures which determine how water resources are allocated. The functions of leading Bargaining and carrying out Codification are not, therefore, to be taken over by private companies. None of the persons interviewed stated otherwise and this is taken as a given in this paper. The question then becomes how corporates involve themselves in Bargaining and are consulted in Codification, as revealed by the interviews conducted during this study.

- Governments must also lead the 'Accounting' so that data/information on available water resources become publicly available. The role of the private sector in Accounting, including, for the purposes of this study, how financial accounting rules and practices value water and other natural resources, is discussed in Section 3.3.

- Which roles are to be carried out by companies under 'Delegation' and Engineering' is also considered in this paper, as well as the extent to which water stewardship initiatives do monitoring and evaluation (M&E) so as to provide 'Feedback' to improve and learn from stewardship.

- 'Finance' is here included in Table 1 (added to the Perry framework) as a seventh essential element and is discussed in Section 4.12.

1.3 The 'private sector'

As for the term 'private sector', it is broad and can apply to many different businesses and corporate entities. A characterisation, for the purposes of this discussion, is set out in **Box 1.**

Box 1. 'Private sector': a characterisation

(i) '**sole traders**': individuals in (a) urban or (b) rural contexts who conduct all sorts of trades, skilled and unskilled, for their own account, with or without a formal business structure (e.g. informal, unregistered), and many as subsistence activities. Example activities related to water are: rain-fed agriculture; market-gardening; fishing; livestock-raising, including in precarious circumstances. Many **farmers** are sole traders, particularly in developing countries.

(ii) **small businesses**: small businesses and groupings of traders in similar types of activities as (i), in both urban and rural contexts, including **agriculture**. As in (i), many will be informal, some formal; some may be able to generate a surplus.

(iii) **medium-sized businesses registered in-country**: companies/businesses created and operated by business people/entrepreneurs in urban and rural contexts, including: growers/farmers, traders in and processors of agricultural products (foods and fibres); manufacturers and suppliers of agricultural inputs (e.g. fertilisers, machinery); leather/tanneries; textiles; beverages and beers; mining and metals; vehicles; hotels/tourism; other service industries (low and high tech).

(iv) **large companies registered in-country**: similar to (iii), but bigger, and perhaps diversified into several/multiple sectors; national water utilities can come under this category.

(v) **foreign-based companies/multinationals**: companies headquartered and registered elsewhere, which may be operating in many countries; they may operate through (a) 'subsidiary' companies in-country (i.e. wholly or majority shareholding of parent); (b) 'associate' companies in-country (e.g. 25% to 50% holding of parent); (c) trading partners/suppliers (no shares held by the foreign company, or a small minority holding below a 'blocking vote' of e.g. 25%).

As mentioned above, the interviews conducted during this study were mostly (not exclusively) with big companies – category (v) in Box 1. Their supply chains commonly link them with the other categories, (i) to (iv), directly or indirectly. Under categories (i) to (iii) in Box 1, farmers are key actors in relation to water management and stewardship.

Not all businesses in private ownership are constituted as companies. Legal 'partnerships', for example, are another form. Nor do all private companies have the same forms of constitution. The multinationals consulted during this

study are predominantly shareholder-owned, for-profit companies. An example of an alternative form of company which is a for-profit, but is owned by its customers/clients, is considered in Section 5.5 of this paper.

The principal focus of this paper is the use and 'management' by private companies of water to produce goods and services. Water utilities/companies and other providers of water-related services - hydrologists, hydro-geologists, engineers, experts on water quality, etc. - represent a distinct category in corporate water management debates. Those water services providers are less visible and less outspoken[21]. As to why that is, there are, one international consultant suggested, two reasons. First, because utilities work predominantly in urban contexts, with their task being the distribution within the city/town of the 'bulk' water that is brought to the 'city gates'. Secondly, the private (for profit) international water companies have very largely withdrawn from developing countries, after difficult experiences in the 1990s. Those experiences combined with the intense, and sometimes vitriolic, debate regarding participation of the private sector in water services provision in developing countries, particularly international water companies, make company leaders/executives in water utilities wary (according to this view) of possible sensitivities over the extent and limits of their role.

1.4 Types of action

Water management and stewardship mean different things to different people. The classification of water actions proposed by the World Business Council for Sustainable Development (WBCSD) for guidance of its members (for-profit companies) – i.e. a guide by business for business, – is set out in **Box 2**, as adapted and expanded for the purposes of the present study:-

Box 2. Types of action in corporate water management

(i) '**water compliance**', i.e. compliance with laws/regulations in force in any given place/time;

(ii) '**water management**' referring, in WBCSD's understanding, to internal water efficiencies within companies' plants and premises (i.e. at 'sites');

(iii) '**water responsibility**' where companies show that they are 'societal players' by engaging in projects in the catchment [beyond the factory fence] which are examples of corporate social responsibility (CSR);

- including (adding to WBCSD) within/down **supply chains** and including the value chain in its full extent (i.e. beyond supply, to include processing by the company and then use of the product by the customer);

(iv) '**water cooperation**', as per WBCSD, the highest level of engagement where the company is involved in collective action that aims to address risks which affect the company and other stakeholders in the catchment.

- plus some actors, including corporates, highlight as a distinct category of action:-

(v) **policy engagement**: principles and procedures applying to water resources management set out in national or local policies/plans.

Source: WBCSD (2016), as adapted by the Authors

The classification in Box 2 is, according to the WBCSD: 'designed to assist companies come to realistic assessments of appropriate action in the differing circumstances of each plant/premises and operations in their sectors (the nature of their businesses)'.

The classification is useful as a clear and simple categorisation of the different things that companies can do in relation to water. As will be seen in Section 2, category (iv) in this WBCSD classification, 'water cooperation', is equivalent to the level of performance and type of action which the leading international standard for water stewardship encourages water users to attain/demonstrate[22], although, for WBCSD purposes, water stewardship

21 They are seen much less on the panels and in the meeting rooms in Stockholm and at other events. For example, at the FT Water Summit in October 2015, there was only one water (environmental) services provider amid the speakers, a Brazilian company which is as much into civil engineering as environmental services.

22 As a 'core' level of performance the international water stewardship standard described in Section 2 states that water stewards are 'to participate positively in catchment governance' and at 'advanced' level, the criteria to which water stewards are asked to follow explicitly refer to 'collective action'.

is the whole process. The reference to supply and value chains under (iii) ('water responsibility') in Box 2 is added to the WBCSD classification for the purposes of the present paper[23], as is also the highlighting of policy engagement as a distinct category, (v) [24].

Compliance with laws and regulations - category (i) - should be the basic minimum. In some countries the rules and/or enforcement of the rules on water withdrawals and non-polluting discharges may be inadequate. Irresponsible companies may seek to avoid compliance with rules of any type. Compliance is, however, key to access finance from lending agencies.

The distinction between category (iii), where companies show they are societal players through CSR projects, and category (iv), engagement in water stewardship, is a key one for the purposes of this study. As one NGO leader commented, it is the difference between just 'digging wells for corporate social licence' in the way some companies have been doing for the past decade 'to more strategic approaches to catchment management and basin governance'. This is the evolution that he and his colleagues are looking to see. The difference is discussed in Section 2.

One water expert consulted noted that, in addition to the types of action in Box 2, it is important to consider the *level of intensity* of engagement under each type, as well as the extent of that engagement as measured in, for example, hectares or the proportion/percentage of a given catchment, or according to another indicatorindicator (i.e. number of beneficiaries). Additionally, a number of persons consulted referred to the challenge of taking water stewardship initiatives to *scale* beyond bespoke, and relatively 'safe' in reputational terms, site/plant-based activities.

WBCSD notes that category (iv), **water cooperation, may not be the ultimate end goal for every company depending on which plants/premises are operating for what purposes and in which contexts**. Some companies may not, in other words, see category (iv) as part of their role. The scope and limits of company roles are discussed in Section 6.2.

Several company representatives consulted during this study talked about their supply chains and echoed what the Vice-President of General Mills declared publicly at the 2015 FT Water Summit: 'We take responsibility for our supply chain'. That will surely constitute, for large multinationals, a big task, especially where the supply chain involves many agricultural farms/businesses. The corporate representative of Olam noted that its business is close to agriculture, 'at the farm gate' and its aim is 'to secure the sustainability of its agricultural products and food ingredients'. In that, water/soil moisture is a primary concern (blue and green water). The company works with farmers of which there are many in the company's supply chain, 'some 3.9 million', as well as some of its own plantations, alongside its processing plants - a big task indeed[25].

1.5 Drivers of corporate 'water behaviours'

The 2015 report of the Carbon Trust considered the 'business response to climate change and resource scarcity' including freshwater, and noted that companies respond to the 'signals' of three principal constituencies: government, investors and consumers (customers of their products and services – members of the public) (Carbon Trust, 2015). **Figure 1** below adapts that triangle of constituencies to develop an expanded picture of the drivers of corporate 'water behaviours'. The scope of the drivers in Figure 1 is broad.

Company staff/employees, and suppliers, are shown at the centre of Figure 1 as a reflection of their importance. Each company has its intrinsic characteristics: its mission/purpose as set out in its constitution, as operated in/through its culture and values, and as influenced by the structure of its corporate finance - the nature of the company's capital including the combination/configuration of 'equity' and loan finance provided, respectively, by shareholders and bankers/creditors - as well as the nature and scope of its operations in the sector/industry in which it works.

23 WBCSD states that 'supply chains could be addressed in all four strategic positions; this is not limited to water responsibility'. Likewise, 'a company could make sure supply chains comply with legislation, become in itself more efficient, or are managed as part of stewardship'.

24 WBCSD states that 'policy engagement can be seen as part of water stewardship'.

25 'Most companies can only *influence* their supply chain': Sarni, 2011, page 244 (emphasis added).

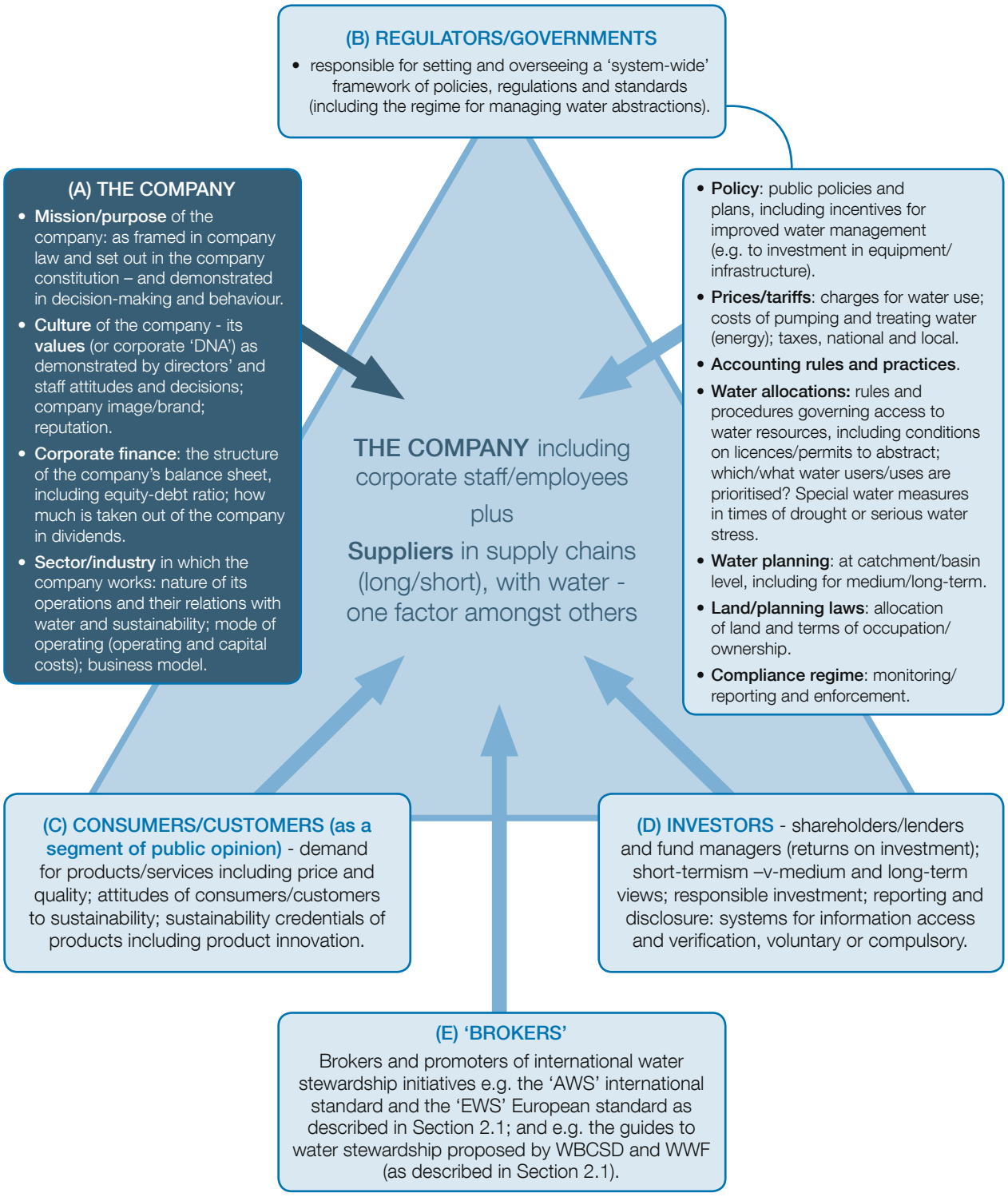
Companies are also influenced by external actors: consumers/customers, and regulators/governments as well as investors who provide the finance. The international water stewardship guides and standards (discussed in Section 2) are also shown in Figure 1 because of their pertinence to this water debate, together with the promoters and 'brokers' of water stewardship. A key proposition in this paper is that the brokers' role is key.

This range of drivers operating on companies is considered in the following sections of this paper. The interaction between the corporates and the drivers is of course two-way. Drivers influencing the actions of companies have implications and effects on how companies themselves act as influencers of actions and behaviours by others, forming together an 'ecosystem' of actors and stakeholders (Deloitte Development, 2015).

Corporate culture was very much on the minds of the company representatives consulted during this study. For example, the representative of a company that produces 'commodity chemicals' and 'vitamins' said that the Chief Executive Officer (CEO) is a biologist who 'sets the corporate culture of introducing innovation to find more sustainable solutions'. 'Alongside watching the company's profit and loss, sustainability criteria are part of job objectives which determine staff bonuses'. The culture of a business influences how individuals within it behave, in response to the rules, formal, and informal, that create the business conduct of the organisation.

Guanaco crossing river in Torres del Paine National Park, Patagonia, Chile © Shutterstock/Pichugin Dmitry

Figure 1: Drivers of corporate 'water behaviours'



Source: as adapted and expanded from Carbon Trust, June 2015, page 10.

'The leadership within an organisation is essential', noted another company representative. 'However well-conceived are [government] regulation and other external drivers of company behaviour, they do not make for strong, well-performing companies without the internal impetus of leadership'. The 2013 Salz Review of business practices at a major bank based in the United Kingdom (UK) emphasised how a company's culture and values need to be 'demonstrably evident in leaders' attitudes, behaviours and decision making' for them to become 'pervasive' - **Box 3.**

Box 3. Salz Review: instilling and maintaining corporate culture/values

The research points to the 'importance of an organisation having a clear sense of purpose. Groups of people require (in a socio-psychological sense) that sense of purpose (what they are there to do). In this way, purpose is a foundation of culture'.

'Most companies communicate their values; what distinguishes them is not typically the precise words but rather the way in which values become pervasive, reinforced through formal and informal processes, and demonstrably evident in leaders' attitudes, behaviours and decision making' (p. 80)'.

'The research also shows that cultures defined by overly commercial and competitive features, with little regard for other elements, lead to poor outcomes. It is inherent in most people to seek purpose beyond the purely commercial. In many successful organisations, this purpose is expressed around their promise to customers and their role in society at large' (p. 79).

Source: Salz, 2013.

As set out in Box 3, the Salz Review described the culture of a company as a combination of the values set and maintained by its leaders and those acted upon by all its representatives in carrying out its role in society. The Salz reviewers observed a culture at the company in question at that time which was 'overly commercial and competitive' which the panel of reviewers concluded was undermining the company's success.

A company representative interviewed during the present study said his company aims to avoid the criticism that it operates a double standard by applying a consistent approach across the countries in which it works, according to the most demanding. One member of an international consulting company had noticed, within some companies, starkly contradictory views between staff in sustainability departments and operational divisions, i.e. a lack of a corporate-wide culture, and importantly, 'alignment and consistency'. This tends to support the view of another commentator consulted during this study that companies (or, at least, large companies) have cultures (plural), with different values and behaviours manifested and communicated in different places. 'Firms', he said, 'are not cohesive units' and 'one firm has several 'cultures', especially if it is a multinational'. The same commentator further challenged the statement of the Salz Review that corporate leaders can change corporate culture. Instead, he argued, the leaders are more likely to be influenced and shaped by the culture of the community of people that make up the company, including the other staff: 'leaders emerge who echo the prevalent culture'. In Figure 1 and elsewhere in this paper, the term 'culture' is employed alongside 'values', and referred to as culture(s), while the expression 'corporate DNA' is also used, borrowing from one international water specialist[26]. DNA is adopted as a convenient metaphor for the different elements that constitute the culture(s) of the company and the intricacies of their interaction[27].

As noted in Figure 1, the mission/purpose of companies is framed in company laws and set out in company constitutions. This issue of company law and constitutions has been analysed in previous articles (see Newborne and Mason, 2012, and Newborne, 2012) and is not discussed at length here[28].

26 Cited in Section 3.5.

27 Unravelling those intricacies could be the subject of further research.

28 Company lawyers and drafters of company statutes/codes in different jurisdictions disagree on whether the purpose of a corporation is to serve the interests of shareholders to the exclusion of others (as long as the company operates within the law), or whether company directors should, or can, take account of other stakeholders, including local communities. Further, the company laws of most US States align with a profit-maximising category, while company law regimes in Europe allow for alignment with a profit-increasing category, for example Section 172 of the 2006 UK Companies Act, and the Dutch Frijns code applicable from 2009 to listed companies (Lambooy, 2010).

1.6 About this study

The authors of this paper carried out interviews - a total of 97 over a period of 16 months from May 2015 to September 2016 - with key informants from companies in different sectors, as well as from a range of actors[29] from other backgrounds who work in, or are close observers of, water management and stewardship.

The interviews were semi-structured and informal to encourage a frank conversation. With only a few headline questions posed by the interviewers, as set out in **Annex 1,** the persons consulted had the opportunity to say what they chose. Meanwhile, the documentation consulted was either publicly available or supplied by persons interviewed. Interpreting expressed opinions and assessing the validity and reliability of factual claims was assisted by the number and diversity of perspectives, following the principle of triangulation. The qualification to that, as noted above, is that the companies consulted were predominantly multinationals based in the US and Europe with the persons interviewed being predominantly headquarters staff rather than operational personnel in-country. The corporate interviewees have mainly been specific water staff, or sustainability and environmental compliance personnel. That bias is acknowledged here. A few small and medium enterprises were talked to, but not many – SMEs could usefully be the subject of a further study.

This paper references documents, but, because of the informal, off-the-record approach to interviewing, only exceptionally the source of oral information is stated - where specific agreement was given for a statement during an interview to be made public including the name of the company or organisation. Documents consulted were either supplied by the persons interviewed or accessed online, including the specific study of ten selected company sustainability reports[30].

As will be seen in the following pages, the testimony recorded illustrates the different drivers of corporate behaviours in diverse contexts. The further the interviews went, the more it became evident that corporate water management and stewardship needed to be placed within the bigger picture of water resources management, hence the inclusion of IWRM among the subjects discussed in this paper and the second question in Section 1.2 on the role of corporates in water resources management system-wide.

A Roundtable discussion was held in London on 22nd April, 2016 to present some preliminary findings, with feedback from 30 persons included.

The above research method used in this study did not - it must be emphasised - include travelling to particular countries or locations where corporate water management or stewardship initiatives are being conducted. When, therefore, examples of such initiatives are referred to in this report, the authors do not seek to judge their particular merits and demerits, except where those initiatives have been the subject of published evaluations by other persons.

IUCN's motivation in designing this study has been the interest in developing a deeper understanding of what motivates businesses to engage, especially in water management beyond the 'factory fence'. This has implications on water governance, competition for water resources, investment in watersheds, and the impacts on hydrological ecosystem services, freshwater systems, and ultimately biodiversity. This study was guided by IUCN's Business Engagement Strategy which aims to encourage transformational change at the company, sectoral and cross-sectoral levels in regard to how biodiversity is valued and managed by businesses. More information on this Strategy is set out in **Annex 2.**

This paper has been peer-reviewed by nine reviewers and is organised as follows.

Section 2 reviews the meaning of 'water stewardship', according to three international guides/standards as well as companies' interpretations of the concept, and refers to key steps to becoming a good water steward, including certification. Water stewardship is then compared with IWRM and the question posed of how far the two are connected. An analytical framework for identifying how companies manage water and water-related investments and for differentiating corporate 'water behaviours' is then proposed.

29 The persons interviewed during this study were from companies and groupings of companies (trade associations and coalitions), financial/investor institutions, regulatory and other public sector bodies, NGOs, donors, certifying organisations as well as researchers/academics/independent consultants. Attendance at various events also allowed for further one to one discussions, and to listen and engage in wider discussions.

30 Company sustainability reports of ten companies, six European-based companies, two US-based, one joint UK/South Africa and one Asia-based.

Section 3 describes corporate water management and stewardship activities and concerns that company representatives were most ready to talk about, as reflected in the interviews carried out and the documentation read during the course of this study, as well as what motivates companies to engage in water management and stewardship.

Section 4 considers what companies do not talk about, or talk about less, in relation to water management and stewardship, as noted during the interviews and in company documentation. Compared with the topics noted in Section 3 that the persons consulted highlighted, which aspects and issues did they tend to ignore – or even mask?

Section 5 returns to the bigger picture of water resources management system-wide and considers the role of governments as well as private companies, the contribution of NGOs and donors, and the perspectives of investors.

Section 6 'takes stock' – assesses progress of companies to-date as against the international guides/standard to water stewardship, and considers what role companies may play in water resources management – how they fit in the bigger picture of water resources management with its many actors and stakeholders and its challenges and complexities. The authors note the major shift that companies need to make and the authors, further, make recommendations to governments, private companies, NGOs, investors and donors, with also brief suggestions for further research.

Coal fired electric power plant © Shutterstock/ESB Professional

2. Water Stewardship and 'Integrated Water Resources Management'

'Good water stewards understand their own water use and catchment context… Shared water challenges represent opportunities to create shared value through collective action'.
(Alliance for Water Stewardship, in the AWS standard)

'Water stewardship focuses particularly on the private sector as a catalyst for reviving integrated water resources management with new incentives to push forward IWRM so that governments accord greater priority for water resources management in their policies and budgets'.
(A representative of an international implementation agency)

This section sets out the definitions and aims of water stewardship as proposed by its principal proponents, with steps on the path to water stewardship, and gives examples of company responses to-date - positive, negative and nuanced. The section further recalls the principal characteristics of integrated water resources management (IWRM), and then considers the similarities and differences between water stewardship and IWRM.

2.1. 'Water Stewardship'

The most commonly cited definition of 'water stewardship' is that of the Alliance for Water Stewardship (AWS) as follows: 'the use of water that is socially equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site and catchment-based actions' (AWS, 2014, p. 6). 'Economically-beneficial' refers to water use that 'contributes to **long-term** sustainable economic growth, development and poverty alleviation…' (AWS, 2014, p. 6, emphasis added).

The category of actor primarily targeted by the stewardship standard, according to AWS, is private companies, although public agencies and other actors may also adopt the AWS standard. The terms 'corporate water stewardship' in particular and 'water stewardship' in general reflect this distinction.

As per the AWS standard, water stewardship starts at the 'site' (e.g. the plant/premises of a company), although the standard emphasises the importance of going beyond the site to the 'catchment'. AWS standard Step 1 states: 'Good water stewards understand their own water use and catchment context' and Step 2 refers to engagement in 'individual and collective actions that benefit people and nature, both at the site level and beyond the boundaries of the site'. 'Sustainability' is determined 'by the **long-term** ability of the system to meet all of the water needs of users in the catchment, including ecosystems, bearing in mind, climatic shifts' (AWS, 2014, p.10, emphasis added). The combination of 'individual and collective' action is reflected in the 'shared' nature of water challenges which the good water steward will want to address so as to reduce its risks. A question arises as to the synergies and possible tensions between these individual and collective elements. Also, how the AWS standard helps identify what is a shared water risk requiring a shared water response.

The Standard states that these shared water challenges represent opportunities to 'create shared value' (AWS, 2014, p. 6, 17, 91, 92, 95, 97 and 152) and that the creation of shared value is integral to water stewardship[31].

31 Orr and Sarni (2015) consider that creating shared value (CSV), as described by Porter and Framer (2011), is too narrowly efficiency-focused to take account of what stewardship does (or aims to do) in the wider catchment. According to Orr and Sarni, for businesses 'water challenges involve complex and social and environmental considerations beyond efficiency' (Orr and Sarni, 2015). While, at one point the leading 2011 Porter and Kramer article refers to a list of three 'ways' to create shared value (reconceiving products and markets; redefining productivity in the supply chain; and enabling local cluster development) which are indeed focused, the definition of CSV proposed by Porter and Kramer is elsewhere broad, encompassing 'economic value and societal value', i.e. surely beyond just business and financial efficiency.

As for the meaning of 'creating shared value' here, the AWS standard sets out a definition – see **Box 4. -**which is based on the concept as proposed by Porter and Kramer (Porter and Kramer, 2011) and describes the kinds of social, economic and environmental values to be achieved.

Box 4. 'Water stewardship' – opportunities to 'create shared value'

According to the AWS standard: 'While the term 'creating shared value' has received considerable attention in recent years, the concept of generating positive benefits for those outside of a company/entity is far from new. As considered within criterion 2.4 [of this AWS standard], this aspect of the standard relates to the site's 'creation of economic value, social value or environmental value that benefits stakeholders outside of the site'.

'It is generally difficult (if not impossible) to separate value creation from water-related value creation since the site requires water to operate. As such, the shared value creation is broadly defined rather than restricted to water-related contributions. Examples of each of these different areas include:-

- **Economic value**: workers' jobs and wages, payments to government, payments to others through operating costs, and community investments;
- **Social value**: improved health (water-related), improved education (water-related), improved civic engagement in catchment governance processes and improved water recreational opportunities;
- **Environmental value**: improved freshwater or wetland habitat health, lowered pollution emissions and healthier freshwater species; generally includes the array of water-related ecosystem services'.

Source: AWS, 2014, page 92.

An example of a multinational company that aims to create shared value is Nestlé, the global 'nutrition, health and wellness company' (Nestlé, 2014). Other actors, including public bodies and non-governmental organisations, may, of course, also aspire to achieve the kinds of social, economic and environmental values referred to in Box 4. In interpreting those three 'areas' of value, much will depend on the metrics that corporates and other actors choose to adopt[32]. Job creation and economic development are key justifications that international donors make for promoting private sector engagement and support, given that the private sector (of different types – Box 1) often accounts for the majority of a country's jobs (Carter, 2015), and provides important tax revenue. As argued by Oxfam, the *type* of jobs and the wages earned need to be taken into account if poverty reduction is to be achieved[33] - with skills also required in the public sector to help govern the country, and oversee regulation of public and private interests.

The AWS standard further calls upon water stewards to use water resources responsibly. The AWS standard's definition of responsibility is: 'A sphere of duty or obligation assigned to a person by the nature of that person's position, function or work…' (AWS, 2014, p.35), i.e. **each actor to its own niche role(s)**. Specifically in relation to water management, 'responsible' means: 'making the water that the company is abstracting at present go further' (efficiency of use); and 'reducing the volume of water abstracted by the company', where 'managing sustainably' so demands (AWS, 2014, page 4).

As for the first element in this definition, examples of water use efficiencies by companies are set out in Section 3 of this paper. For the second element identified by the AWS standard, it clearly states that responsible use can sometimes mean the user accepting a reduction in the volume of water it withdraws. This is reiterated on page 22 of the AWS standard:-

> 'In a case of water scarcity, the site must continually decrease its water withdrawals until best practices are met…' with a note added: 'if a site wishes to increase its water use in a water scarce context, the site must cause no overall increase in water scarcity in the catchment'[34].

32 The AWS standard says that sites are free to use whatever metrics they feel are appropriate so long as they capture the intent of water-related value generated by the site for others including by reference to the original methodology for calculating shared value developed by Porter and Kramer.

33 In relation to 'workers' job and wages', Oxfam notes that a key indicator could be differences in wage/salary levels between the highest and lowest paid staff within a company's operations in a given country or place. Oxfam's private sector adviser highlights, in his March 2016 blog, the tendency of businesses to want to avoid discussing inequality and how private companies can contribute to SDG Goal 10: 'Reduce inequality within and among countries' (Sahan, 2016).

34 This would seem to contradict what the AWS standard seems to imply elsewhere of 'minimising negative impacts and maximising positive impacts for everyone'.

With pressure on water resources incurring in many locations combined with climatic variability, it is likely that companies, alongside other water users, will face water constraints. Many companies are aware of this reality – increasingly so - but some ignore it, seeking to resist all reductions in the volumes of water they abstract until a crisis hits (severe drought or flood, or a major pollution incident) which obliges them to reduce[35].

As for compliance – category (i) in the WBCSD classification of water actions in Box 2 (Section 1.4) - good stewards, the AWS standard states, must comply with 'all national and state water regulations and laws' (Step 3.1, p.111).

The European Water Stewardship (EWS) Standard has the same objectives and principles and sets out a code very similar to the AWS standard (EWP, 2012). It was launched prior to the AWS Standard in 2011 as a result of a multi-stakeholder development process and taking into account the regional particularities of the European Union (EU), including the EU legal framework applicable to EU Member States, the European Economic Area and EU candidate countries. The administration and management of EWS is separate, although the European Water Partnership (EWP) was a founding partner of the AWS, so both standards are closely linked (and working towards further integration).

The representative of the EWP said: 'Corporate water stewardship is needed across the globe. There will be regional specificities, but companies need to take a proactive role on corporate water stewardship in their operations and collective action with catchment stakeholders in Europe as well as in their global supply chains. The need for increased corporate water stewardship has been recognised by the European Commission and European Parliament, both of whom endorsed the EWS standard and promote its application through their policies and resolutions'.

The EWP representative added: 'In the three years since launch of the EWS standard, companies in the beverage, chemical, disposable goods and food processing sectors have been certified by EWS. While certification may be a final goal, it is not the sole purpose of the EWS (or AWS). Companies and other stakeholders can apply the standard voluntarily in order to improve their water management without going through certification. Thus, water stewardship can involve certification according to the AWS Standard globally or European standard in Europe based on a credible third party verification system'.

An alternative framing of water stewardship is proposed by the international NGO, WWF. WWF established its programme on water stewardship in 2008 and framed the 'water stewardship journey' in five steps: 'Water awareness', 'Knowledge of impact', 'Internal action', 'Collective action' and 'Influence governance'. These steps are outlined in **Figure 2** [36] and shown in **Annex 3** in full.

WWF emphasises the nature of the progression from the first three steps (Water awareness, Knowledge of impact, Internal action) to the next step,' Collective action' and beyond. As stated by WWF in a 2013 Brief:-

> 'This is where a company shifts from management to stewardship – where the rules, measures, focus, engagement, control and complexity change considerably – and where traditional notions of business sustainability are most challenged by the resource' (WWF, 2013, p.16).

When companies make that progression, they move from their 'direct sphere of control' under Steps 1 -3, to an 'indirect sphere of influence' under Steps 4 and 5, from the 'efficiency of water resources' to the 'allocation of water resources' and from 'The risks I face' to 'The risks we face' (WWF, 2013, p.16). In other words, this is a jump from being an efficient water user to a commitment to 'the sustainable management of shared water resources in the public interest through collective action with other businesses, governments, NGOs and communities' (WWF, 2013; Morgan and Orr, 2015).

35 The AWS standard notes that: 'Water scarcity is typically calculated as a ratio of human water consumption to available water supply in a given area. Water scarcity is a physical, objective reality that can be measured consistently across regions and over time. Water scarcity reflects the physical abundance of fresh water, rather than its availability for specific needs. For instance, a region may have abundant water supplies (and thus not be considered water scarce), but have such severe pollution that those supplies are unfit for human or ecological uses'. In relation to 'water stress', the AWS standard defines this as (p. 39): 'The ability, or lack thereof, to meet human and ecological demand for water. In other words, compared to scarcity, 'water stress' is a more inclusive and broader concept. It considers several physical aspects related to water resources, including water scarcity, and also water quality, environmental flows and the accessibility of water (i.e., whether people are able to make use of physically available water supplies), which is often a function of the sufficiency of infrastructure and the affordability of water, among other things. Both water consumption and water withdrawals provide useful information that offers insight into relative water stress…' (AWS, 2014, page 39).

36 On the WWF International website, a sixth step is added as follows: 'Better basin governance' – 'Better basin governance is a term, but it encompasses a belief within the freshwater team that we are creating incentives for people to act on water use – either directly and indirectly – and that through their engagement, better management and governance will be in place to protect the species and places we care about'.

Figure 2. Steps to better Water Stewardship - WWF

Source: WWF International website http://wwf.panda.org/what_we_do/how_we_work/our_global_goals/water/water_management/stewardship_steps/

The distinction between CSR projects and stewardship was noted in a blog co-authored by Stuart Orr of WWF International in 2013: 'Becoming a good water steward necessitates shifting from ad hoc and philanthropic initiatives – even with associated reputational enhancement – to recognizing water as a strategic and core business issue that is material to profits and long-term opportunities for growth'[37].

The above terms employed by WWF are similar to the terms employed by the AWS standard, whilst a distinguishing feature of WWF's approach is its emphasis on the 'learning, acting, doing and improving' approach that it proposes to companies. WWF states that 'Water stewardship for Business' is 'a *progression* of increased improvement of water use and a reduction in the water-related impacts of internal and value chain operations' (WWF, 2013, p.1, emphasis added). WWF is, it says, 'helping to redefine the role of the private sector'[38], through its partnerships with companies. As to the nature of the partnerships that NGOs form with corporates, this is discussed in Section 3.7.

WBCSD and WWF do not (at least to-date) publish reports of which companies have progressed to which stages in water stewardship, i.e. unlike the AWS standard, there is no formal system for recognising increasing levels of performance - the core and advanced ('gold' and 'platinum') levels as per the AWS standard (AWS, 2014). Another example of a scoring system is Oxfam's 'Behind the Brands' initiative which scores the 'Big 10' food and beverages companies in their social and environmental policies (principally) and practices (to a lesser extent) including in relation to 'water' as one of seven themes (alongside 'land' and 'climate' also). Behind the Brands is a 'campaign' which 'aims to provide people who buy and enjoy these products with the information they need to hold the Big 10 to account for what happens in their supply chains[39]. The scoring, says Oxfam, is made from publicly available information on company policies.

In this regard, a comparison with the energy sector – the hydropower part of it – is instructive. The International Hydropower Association (IHA), on behalf of the industry, has, in collaboration with a range of actors (NGOs, governments, international financing institutions), produced a tool for assessing hydropower projects called the Hydropower Sustainability Assessment Protocol (HSAP). Under HSAP, the different components of hydropower projects are scored for whether or not they meet basic good practice or proven best practice. The difference between the HSAP for hydropower and the AWS standard for water stewardship is that the HSAP measures the sustainability of actions which the industry does as part of its usual business or increasingly accepted additions to it. The sustainability debate relating to hydropower (intense and sometimes vitriolic) has focused on the social and environmental aspects of dam-building, in particular components of those projects relating, for example, to resettlement of displaced populations, biodiversity conservation, project-affected communities

37 '5 smart ways to face water stewardship', by Anonymous and Stuart Orr, August 30, 2013, GreenBiz: https://www.greenbiz.com/blog/2013/08/30/5-ways-promote-corporate-water-stewardship

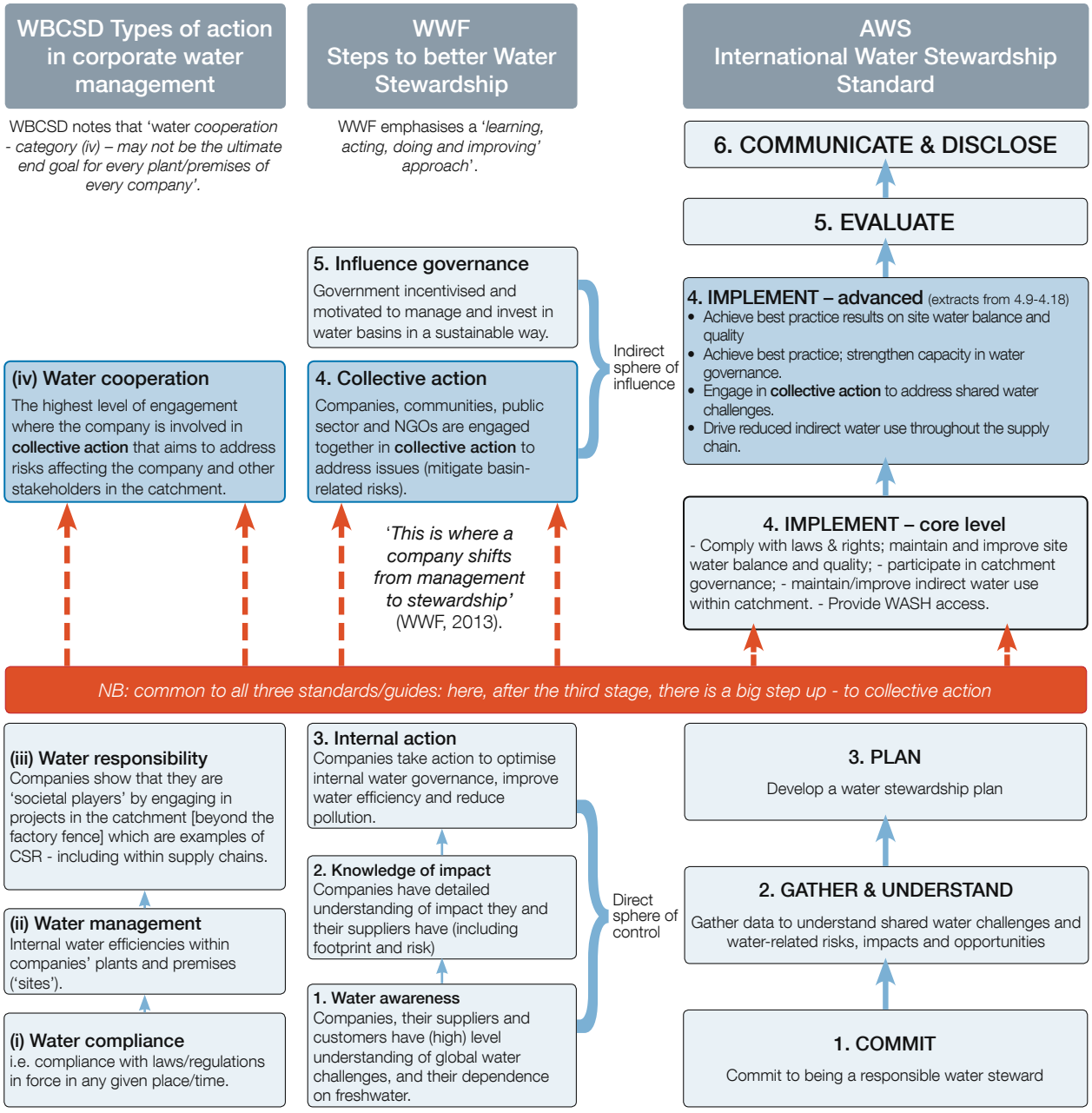
38 Source: WWF International, as above.

39 Source: http://www.behindthebrands.org/en-us

and livelihoods which have become, over time, norms, alongside the core civil and mechanical & electrical engineering aspects and accompanying project management. The hydropower industry is, in other words, further ahead than water stewardship in promoting sustainability standards[40]. The question arises how far the progress of water stewardship can follow that. Water stewardship arguably makes greater demands of private companies in terms of going beyond their 'comfort zones'.

Figure 3 shows how the types of action in the WBCSD classification in Box 2 in Section 1.4 align with the WWF steps as well as the steps and actions under the AWS standard.

Figure 3. The WBCSD, WWF and AWS actions and steps for water stewardship



40 This is not to say that all hydropower projects and contractors follow the HSAP sustainability standards as yet. It is, a voluntary code that, at present, the World Bank, now once again focussing on supporting its Member Countries invest in hydropower options, has not committed to using and applying as part of its safeguards process.

Common to the three standards/guides is the **big step** up to collective/cooperative action, after the third stage of the process, that companies and other actors are encouraged to follow, as shown in Figure 3. As per the statement from WWF (WWF, 2013) referred to above, where a company or other actor is willing and able to engage in cooperative/collective action, this is where a shift occurs from management to stewardship, beyond CSR projects[41].

As alluded to in Section 1.4, the WBCSD guide is a business-to-business guide, whereas the drawing up the WWF guide and the AWS standard was led by NGOs. That difference is reflected in the designation of 'Compliance' as Step (i) in the WBCSD guide, with compliance not being explicitly highlighted in the WWF/AWS steps. Corporate headquarters will naturally hope that all operational sites are compliant with the law. Yet assuming this is the case, especially in different countries with different legal requirements poses a risk. As Sosa and Zwarteveen (2016) indicate 'when something is legal, is it assumed to be right' regardless of the social and environmental context it is applied in.

2.2 Integrity and accountability

The AWS standard sets out aims in terms of transparency, accountability and equity. The first intended outcome of water stewardship is 'good water governance' defined as:-

> '… the state when the political, social, economic and administrative systems that are in place, which directly or indirectly affect the use, development and management of water resources and the delivery of water services at all levels of society, promote stakeholder participation, **transparency, accountability**, rule of law, and equity in a manner that is effective, efficient and enduring and leads to the desired state of the water resource(s)' (AWS, 2014, p. 9 - emphasis added).

The AWS standard, noted one interviewee, is not a tool for assessing and verifying the organisational process of stewardship. It refers to collective action (Step 3.5 'achieving a consensus among stakeholders', Step 3.6 'developing a coordinated plan for climate change adaptation' and 'engaging in collective action' (Step 4.15)) without guidance on how to do so. This person added: 'that's the job of the Integrity principles proposed by the CEO Water Mandate' in its 'Guide for Managing Integrity in Water Stewardship Initiatives'[42] as set out in **Box 5**[43].

Box 5. Integrity principles for Water Stewardship Initiatives

Principle 1: Seek to align with, support, and strengthen public policy that advances sustainable water management; be careful not to undermine public institutions or water governance.
Principle 2: Ensure appropriate and balanced representation of interests throughout the course of the water stewardship initiative.
Principle 3: Be clear and transparent about the roles and responsibilities of participants of water stewardship initiatives, and ensure that their capabilities are adequate (or are sufficiently developed) to fulfil them.
Principle 4: Be clear and transparent about the water challenge(s) being addressed by the water stewardship initiative, as well as the agreed scope and intended benefits.
Principle 5: Be clear and transparent about how the water stewardship initiative is to be governed.
Principle 6: Track outcomes against the stated objectives of the water stewardship initiative.
Principle 7: Foster an ethos of trust, and establish expectations for behaviour of participants in the water stewardship initiative.

Source: CEO Water Mandate and Water Integrity Network, 2015

The nature of the integrity risks facing water stewardship initiatives was studied through fieldwork undertaken in 2014 for the CEO Water Mandate and Water Integrity Network in Tanzania, South Africa, and Peru, and during consultation meetings in Lima, London, Lusaka, New Delhi, Paris, Pretoria, and Stockholm[44]. Analysis was made of 18 historical, on-going, and emerging water stewardship initiatives, including interviews with the range of actors involved in them.

41 One international water specialist who acts as adviser to water stewardship initiatives agreed with this analysis and recommended 'not being too consultative' in the first steps of the process - only 'raising the bar' of participation when moving into catchments to engage in collective action.

42 CEO Water Mandate and Water Integrity Network, 2015.

43 Developed by the following organisations: The Water Integrity Network - WIN, the Pacific Institute, Water Witness International, Partnerships in Practice (PiP) and Pegasys.

44 The following organisations participated in the study for the CEO Water Mandate and the Water Integrity Network: GIZ, Water Witness International, BPD/Partnerships in Practice (PiP) and Pegasys Strategy and Development, Ltd.

The case study initiatives covered a range of multi-stakeholder and corporate engagement activities on water, including 'local project implementation, establishing novel financing mechanisms to improve water supply and/or quality, convening for policy dialogue or planning, and supply chain engagement' (CEO Water Mandate et al, 2014, p.16).

Based on that, the 2015 Guide for Managing Integrity in Water Stewardship Initiatives states that, 'first and foremost, the water stewardship initiative should ensure that its scope and objectives support and strengthen public policy relating to sustainable water management. In some instances public policy, laws, and regulations may be weak, ambiguous, inconsistent, or may not be geared toward delivering sustainable water management. In such cases reforms and review, rather than alignment, may be the priority for a water stewardship initiative'. Where this is the case, it will be important for the initiative 'to develop a **constructive relationship** with the government and its agencies, and to engage an appropriate range of stakeholders in a sector reform dialogue in the design, scoping, and implementation of the water stewardship initiative' (CEO Water Mandate and WIN, 2015, page 21, emphasis added).

'Integrity', according to the CEO Water Mandate requires the following key elements:-

- 'clear objectives and demonstrable outcomes that advance sustainable water management;
- trustworthy, credible, and **accountable** participants; and
- **inclusive**, transparent, and responsive processes and governance that lead to informed and balanced decision-making' (emphasis added).

The Guide further highlights the importance of a balanced representation of interests in water stewardship initiatives (Principle 2), through 'inclusive, transparent, and responsive processes' (CEO Water Mandate, 2015, p.13).

The consortium which studied this subject for the CEO Water Mandate noted that integrity risks arise during all stages of a water stewardship initiative, starting with planning and design, and followed by stakeholder engagement, decision making and communication, financial management, and monitoring and evaluation (the lack of independent external assurance being a point rasied by Jones et al. 2016).

> ' Getting these processes right is critical to ensuring that the water stewardship initiative delivers on its objectives and serves the public interest. In the absence of robust, well-designed, and transparent processes for planning, decision making, stakeholder participation, whistle-blowing, financial management, and monitoring, water stewardship initiatives are vulnerable to corrupt behaviours, capture, and manipulation toward vested interests'.[45]

An example of 'capture and manipulation' of interests would be where the leaders of a multi-stakeholder partnership determine for their own ends, directly or indirectly, who participates in the water stewardship initiative, and how they participate in it. In some cases, this could be considered 'policy capture', depending on the seniority of engagement and the level of influence with government (with respect to public policy). Equally, policy capture may be considered as private interests capturing public finance decisions in such a way that benefits corporate outcomes. Public sector decisions to improve market access and performance for agricultural production, for example, may improve corporate productivity and returns *and* create rural employment, while stimulating the rural economy and increasing tax revenue. The CEO Water Mandate Guide is a guide to the necessary elements of integrity in the process to arrive at those goals.

The CEO Water Mandate's 'Guide to Responsible Engagement in Water Policy' advises companies to create and maintain 'lines of communication' with key stakeholders to show that companies are transparent about their intentions and results (CEO Water Mandate, 2010, p.63). The Guide defines 'water policy' broadly to encompass 'all government efforts to define the rules, intent, research, and instruments for managing water resources', not only 'the legal and regulatory dimensions, but also the planning around water allocation and the implementation practices by water managers and other stakeholders in support of the management system' (CEO Water Mandate, 2010, p.12). Water policy is defined, in other words, as covering not only 'Bargaining' and 'Codification' in the Perry framework in Table 1, but also 'Delegation' of certain implementation roles. The implications of this are discussed in Section 6.2.

As for relations of power and responsibility between the leaders of water stewardship initiatives and other stakeholders participating in those initiatives, a framework for analysing accountability is set out in **Annex 4.** The framework was originally conceived for application to health and education providers and water utilities (i.e. water services rather than water resources management), but is here adapted to apply to 'water stewardship services'. The focus of attention of the water stewardship integrity principles is the 'short route of accountability' as described in Annex 4 – between

45 http://ceowatermandate.org/integrity/understanding-integrity/

water users participating in a given water stewardship initiative and the leader(s) of that water stewardship initiative. The integrity principles do also make some reference to the type of issues which are 'long route' – water users seeking to hold institutions (government officials) and elected leaders to account while those officials and elected leaders hold to account the leaders of water stewardship initiatives (the long route is shown in Figure 7 in Annex 4)[46].

One integrity risk of water stewardship initiatives noted by the consortium on behalf of the CEO Water Mandate is where 'a participant offers an investment in the initiative and seeks to make it conditional to its uninterrupted access to water during drought'[47] – in other words, the scenario again of a company or other actor who refuses to acknowledge the need to reduce the volume and/or modify the timing of its water withdrawals.

The issue of tracking outcomes, as referred to in Principle 6 in Box 5, is discussed in Section 4.4.

2.3 Responses to the stewardship standards – some examples

The interviews conducted by this study pointed to a range of views relating to the AWS and EWS international standards, and to certification in particular.

The AWS standard, one commentator said, is good for raising awareness of hydrological issues and challenges in catchments. A donor representative echoed this: 'IWRM does not look at on-site solutions for companies'… 'The AWS standard can help companies better understand their water position. It definitely has added-value.'

One NGO leader of water stewardship initiatives commented: 'The interest of the AWS standard is the potential to drive 'systemic change', for companies (and other actors) to use the standard as a benchmark against which to measure their performance and as a 'differentiator' which can hold companies to account'.

The representative of a multinational company in drinks/beverages said that water stewardship was 'to push government to make choices and take action'[48]. This is a view shared by a number of persons consulted during this study, namely that the function of stewardship initiatives is as a **catalyst**. As similarly expressed by the representative of an international implementig agency, water stewardship focuses particularly on the private sector as a catalyst for reviving IWRM 'with new incentives to push forward IWRM so that governments accord greater priority for water resources management in their policies and budgets'.

In other words, private 'water stewards' instigate actions, with or without the support of brokers or promoters, and then prompt/catalyse (push?) governments to pick-up and run with those, under (public-led) IWRM. In this process, the brokers' role is surely key. Without it, would either companies or governments do as much to tackle difficult water resources management issues? This agency representative preferred to call the process 'water stewardship', rather than 'corporate water stewardship' in that it can (as supported by this donors) combine the private and public sectors, as well as NGOs. In that way, to use a metaphor, the 'lens is wide-angled' - not a case of companies alone 'looking down the end of a long telescope'.

One interviewee said that his company had embraced the AWS standard, acting first as a member of the AWS committee who drew it up, and more recently starting to apply the standard. The company is 'road-testing it in a number of heavily water-stressed locations', to see how it works including assessing the costs and benefits associated with certification (capital and operational expenditure), before deciding how to approach this in future. As to communicating the usefulness of the AWS standard: 'It is easier to promote water stewardship to farmers than to plant managers. Farmers live and work close to the land and to water, so it is a concept they can more readily understand'. To plant managers, 'it is often a harder sell, at least initially'. The way to do so is 'to emphasise the risk of disruption to operations'. The company does not, however, intend to apply the AWS standard everywhere. Where water risks are 'lower', it is carrying out its own system checks. 'In developed countries, it generally makes more sense to use an established independent system [such as the AWS standard], whereas in developing countries there can be a choice'. Self-audit and third-party audit/certification can, according to this view, be 'complementary'.

46 For example, as per the integrity principles: 'Where water stewardship initiatives engage in policy advocacy, convening, and debate, the resulting representation, knowledge, or power imbalances may send advocacy messages that advance the interests of certain private parties over public interest'.

47 http://ceowatermandate.org/integrity/understanding-integrity/

48 Expressed more strongly by one commentator. For those who consider IWRM is fundamentally failing, the purpose of stewardship is to 'unlock stagnating IWRM processes'.

Another company representative echoed the communication challenge of introducing stewardship to operational staff who can be 'slow adopters':-

> 'It is important to use practical language, avoiding the language of policy people. The objective is to encourage colleagues in operations to explore how they can raise the bar of water management by the company in its own production process'.

His preference is to speak 'modestly and realistically of what a company's contribution will be to the big picture of water management, avoiding extravagant claims'. He added: 'The focus should be on local catchment actions near company plants/premises'. This is discussed further in Section 5.5.

One European-based multinational whose main business is to supply chemicals is applying the EWS standard in Europe, before taking it to other parts of the world. The standard is useful, the company representative said, 'for the catchment vision': 'it helps us to structure our actions across water topics'. The company does its own checking, although it says that it may use third-party certification in future, but 'there is a cost-benefit to calculate in that'. The company fully supports the EWS standard and hopes that water stewardship will become more main-stream, with widespread application of both the EWS and the AWS standard.

Hepworth and Farrow (2015, p.2) report that the AWS stewardship standard adopted at Olam's Aviv Coffee Plantation in the Upper Ruvuma Basin in Southern Tanzania has 'bolstered Olam's efforts in Tanzania'. The project has supported establishment of a water users' association. The report of this project recommends that Olam surrender the part of its water allocation at the farm site that it is not currently using. 'Future water needs for any extension of the plantation area should be obtained under a separate permit application' (Hepworth and Farrow, 2015, p.28). The project has 'provided the company with the methodology, knowledge and capacity to re-apply the [AWS] standard' to 'other sites of operation internationally' (Hepworth and Farrow, 2015, p.5).

Sector groupings and industry bodies are developing their special, tailored versions of the AWS standard, given that AWS is a standard for site-based stewardship, not an industry specific standard. An example is the International Council on Mining and Metals (ICMM) which has produced its own water stewardship code (ICMM, 2014). The framework refers to the AWS standard, whilst adding special elements for the mining and metals industry. The set of questions to be investigated by companies in the 'Assessment' phase of the ICMM document (Step 2 in the ICMM document) is long – as the ICMM says, a good, although 'demanding', substantive guide for its members. As the document notes (p.27), each company has to screen 'a complex mix of possible issues in the catchment' in order to identify the water risks affecting its mining operations'. The International Petroleum Industry Environmental Conservation Association (IPIECA) - the 'global oil and gas industry association for environmental and social issues' – has, meanwhile, been conducting 'water visioning' which, at the time of writing this paper, it is about to share with a 'working group' (at 2016 World Water Week in Stockholm).

An example of a company that has chosen *not* to adopt the AWS standard had had, its representative said, 'a good look at AWS' which was 'a good standard', but the company was already doing many of the things in the standard and its own system was 'quicker to action', the representative added. 'We could not give the AWS code to a plant manager without more support' (and presumably therefore costs). As for verification: 'the company will hire a major consultancy to do audits', i.e. rather than certification.

A European-based company supplying bottled water has its own 'well-developed' code for 'wise catchment management' and consequently does not see that there is an added value, in its case, to work with the EWS or AWS standard. The company's code is 'not very different' from the AWS one. The company operates its own system of monitoring and annual auditing of its bottling plants.

Large companies, commented another one person interviewed, will naturally tend to develop their own stewardship schemes 'to control the agenda and avoid scrutiny when they do not want it'. He continued that 'CEOs of large companies will tend to ask for just a few options to resolve the water access problems facing the company, instead of a long list' such as that set out in the AWS standard.

Another interviewee's take on the AWS standard was that some companies do not need the standard to be more efficient on their own sites, but need to be encouraged to engage beyond (i.e. to make the shift beyond Step 3 in the three international scales in Figure 3).

A representative of a commodity trading body thought that companies might not be openly adopting the AWS standard for 'fear of the responsibilities'. He wondered whether 'the AWS code, potentially, affects the risk profile of companies, i.e. pushing it up, rather than down'. This is an interesting observation. The international standards should surely take effect to empower water stewards rather than discourage them. In relation to the responsibilities of stewardship, lawyers (in-house or external) may possibly caution company executives as to the dangers of entering into catchment-wide agreements which could give rise to legal duties of care to third parties, as well as obligations to immediate contracting parties. One company representative that uses water in their operations focussing on adding value to a mineral supply chain was very clear, '…the nature of stewardship doesn't allow us to easily identify boundaries for our commitments, and where this is possible it may be difficult to maintain them. We view this as a risk, even though we invest in water management at our sites'.

In relation to certification, the representative of a multinational company that produces beer said that they do not favour certification. They have more than 100 breweries. 'A few may be gold [in the AWS standard], a few may not make the grade, and all the rest are bronze. It's not really a great advertising campaign for the company'. They do, however use the AWS standard for internal guidance. Similarly, the representative of international foods company stated: 'Our company does not directly face the consumer, so we can use what the AWS standard says internally without getting certified'.

Release gate on the Jirau hydro-electric dam, Madeira River, Brazil © Peter Newborne, ODI

A key question is whether certification can be promoted successfully down supply chains and particularly agricultural supply chains. To push its suppliers to improve their water management, a retailer in food, clothing and home products has chosen, it says, 30 sites where it is asking the supplier to work to 'some kind of' certification, although it considers the AWS code to be 'too long and cumbersome'. The company has learnt how to focus down on 'what really matters'.

The large majority of companies interviewed during this study recognise AWS as the best standard tool currently available for guiding and evaluating water stewardship, even if they have decided not to apply it (or closely apply it) themselves. One international commentator compared the AWS standard to the Hydropower Sustainability Assessment Protocol[49]. In relation to hydropower projects, the HSAP is also considered to be the best tool available,

49 He added that he considered that water stewardship was not like forest stewardship, in that it did not allow a label to be attached to products in shops and retail outlets in the same way as for the Forest Stewardship Council (FSC) label which is attached to timber and forest products produced from well-managed forests. Guaranteeing sustainability in relation to the water embedded in products would be more difficult because of the length and, often, complexity of supply chains, and the possible reverse effect this may cause, increasing water use in dry basins, and diverting attention and investment from basins with more rainfall and poor rural populations.

at least currently (Skinner and Haas, 2014)[50]. As noted in Section 2.1, the International Hydropower Association (IHA) is promoting the use of the HSAP with its system for assessing and scoring sustainability performance against detailed criteria[51] as per the AWS standard and potentially the other international scales. Similar HSAP-related questions arise as in the case of certification under the AWS standard, namely how many companies will be ready to follow the HSAP process, and for what reason, based on demand from whom, including incurring the cost of assessment under the HSAP. Also, to what extent does the existence of the HSAP actively encourage companies to raise their standards of hydropower practice, in continuous improvement from 'Level 1' in the HSAP scale upwards to Level 3 (basic good practice) and Level 5 (proven best practice)? After the first rounds of assessments under the HSAP, the role of the IHA will be to push companies which are currently laggards to improve their performance so as to become leaders (Newborne, 2010). In relation to water stewardship, the role of 'brokers' and promoters will surely be key in pushing for continuous improvement, aided by measuring and scoring performance.

2.4. Other interpretations of stewardship

Alongside 'water stewardship', there are other standards for natural resources stewardship. The 'country stewardship' scheme in England under the Common Agricultural Policy of the European Union is discussed in section 5.1.

One company representative noted that 'certification is one of the levers to push, but is only part of the solution'. The advantage of internationally-accepted international standards, whether applied to water or energy (e.g. 'Renewable Energy 100 and Circular energy 100), is that you do not have to explain each time what metrics you are using – it is easier to be transparent. The company adheres to a range of such initiatives to show it has a certain level of operation and aspiration'.

On the matter of companies' readiness to submit to independent verification of sustainability issues (not water in particular), a 2014 report sheds doubt on the willingness of large US companies to engage. Of the companies surveyed in a study of how 613 of the largest, publicly-traded U.S. companies are integrating sustainability into their business systems and decision-making (in the areas of governance, stakeholder engagement, disclosure and performance), only 9% put the claims and statements in their sustainability reports to verification by an independent third party (Ceres and Sustainalytics, 2014)[52].

2.5. Progress to-date towards Water Stewardship

As AWS itself observes, it is early days in promotion and adoption of the AWS standard. The focus, currently, it says, is for examples to be worked up that are positive (and to presumably learn from those that are not). Over time, through sustained effort - say the proponents of stewardship and certification - those examples have the potential to progress from individual sites and catchments of good stewardship to become 'clusters' (rather than 'islands').

In relation to certification, the question arises as to the objectives of AWS in the medium and long term. Does it intend to follow a path similar to other stewardship schemes? How is water stewardship different from stewardship of other natural resources, for example forests[53]?

As to which companies are leading water stewardship and which are lagging behind and why, a representative of an international consulting firm commented on very different degrees of familiarity with, and understanding of, water

50 The scope and detail of the 'sustainability criteria' set out in HSAP means that assessments of projects according to HSAP are time-consuming and considered costly by hydropower operators. The question arises how that compares with the AWS standard? Hepworth and Farrow (2015) supply information on the costs of implementing the AWS standard in the Upper Ruvuma basin in Tanzania.

51 It has been noted in Section 2.1 that the WBCSD and WWF schemes of guidance on water stewardship do not, currently, provide for scoring of companies. For WBCSD, this might well not be possible, as it would appear to be benchmarking their own corporate membership.

52 One independent expert consulted during this study recommended that independent verification of sustainability reports be established as a compulsory requirement for stock exchange listed companies.

53 The forests certified by the Forest Stewardship Council (FSC) are the equivalent of 'sites' in AWS language. The difference is that a FSC-certified forest manager needs only to look beyond the boundaries of that forest to the extent a limited category of things are happening outside, e.g. if biodiversity is being disturbed nearby (source: key informant interview). That compares with the emphasis of the AWS standard on the catchment beyond the site. Traceability is a major issue for FSC. For every certified forest, there are 100-200 'change of custody' certificates. Traceability would be additionally complex for an AWS certification scheme. A difference between the FSC and AWS is that the FSC was established as an open members' organisation, whereas AWS is not constituted as such. FSC took a pragmatic view from the start. As one expert who knows FSC well, commented: 'FSC does not insist on perfection. Instead, major management failings disqualify forests from FSC certification'. This simplicity has created far and wide market 'buy-in' to the scheme.

management issues among its clients. Companies who are not major water users[54] and cannot see water risks affecting their businesses will be less motivated to take action and less likely to extend their understanding of water issues.

As noted in Section 1.5, contradictory views may be held in different parts of the same company. The same representative referred to an example of the division of a multinational company pursuing an approach to planning future water-related investments which was pulling in an opposite direction to the division responsible for assessing and mitigating water risks.

The CEO of a further company - according to a member of an international NGO consulted during this study - just 'wanted good stories to tell', leaving a doubt as to how far sustainability was 'really playing a part in the job descriptions and targets of middle-managers', and indeed at the 'C' level at that company[55]. When the NGO in question wanted to move from 'neat and tidy case studies' to discuss more complex ones, 'the flow of information from the company dried up'.

CDP's assessment of the current status of water management and stewardship is that the leading companies are not necessarily those that are most visible at international water meetings. CDP has in 2015 introduced a 'Water A List' of companies which, based on the water scoring methodology developed by CDP, CDP assess as having made considerable progress over the last five years in disclosing and responding to water challenges (both within company plants/premises and in supply chains, as well as company policies in relation to stewardship beyond the factory fence)[56]. In the 2015 report, CDP names eight A List companies, and in 2016 this has increased to 24[57].

As to relationships between companies involved in the corporate water management and stewardship debate, a survey of corporate sustainability reports in 2012 by Daniel and Sojamo (2012) showed 'competitive strategic positioning' between leading multinational companies whose businesses are in close competition in beverages and brewing (e.g. Coca-Cola and PepsiCo, and SAB Miller and Diageo). For example, 'a major driver' for Diageo to enhance its water-risk strategy was that its direct competitor, SAB Miller, had 'taken the lead on quantifying and accommodating water risks throughout their value chain' (p.649). Daniel and Sojamo comment that, once a company has decided to take the initiative regarding its respective water risks … it seems to have generally followed the path of leaders in the field' which, the authors conclude, thereby 'reconfirms the dominant position'. Companies will aim to use this first mover advantage to retain or boost market share, promote the brand and lever other commercial benefits. Realistically, this is to be expected.

2.6. Integrated Water Resources Management

The most commonly cited and accepted definition of IWRM as proposed by the Global Water Partnership (GWP) in 2000, including its foundational principles, is as follows:-

> '[IWRM] is a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems'[58].

IWRM, notes one author (Hassing et al, 2009), like many profound institutional reforms, takes time because of the steps required to adapt existing institutions (central government) and build the capacity of new ones (basin agencies and local water committees). As an example in Europe, the IWRM process in France was started with the establishment of basin agencies in 1968. Other important milestones were a revised water law in 1992, which was brought in line with the EU's Water Framework Directive in 2003. Meanwhile, in Spain, the process has taken longer.

54 Or at least do not regard themselves as major water users.

55 'C' level management referring to CEO - Chief Executive Officer, COO - Chief Operating Officer, CFO - Chief Financial Officer.

56 The assessments by CDP take account of 'Disclosure' (extent and quality of disclosures to CDP), 'Awareness' ('how comprehensively the company has evaluated how water intersects with its business'), 'Management' ('evidence of actions associated with good water management') and 'Leadership' ('actions representing best practice as formulated by organisations working with CDP to advance water stewardship (e.g. CEO Water Mandate, Ceres, WWF)'.

57 The eight companies named by CDP as joining CDP's Water A List in 2015 are as follows: Ford Motor Company (USA), Toyota Motor Corporation (Japan), Asahi Group Holdings, Ltd (Japan), Colgate Palmolive Company (USA), Rohm Co., Ltd. (Japan), Harmony Gold Mining Co Ltd (South Africa), Kumba Iron Ore (South Africa) and Metsä Board (Finland). In 2016, the 24 companies listed in the A List are: ACCIONA S.A. (Spain), Anglo American Platinum (South Africa), BASF SE (Germany), Bayer AG (Germany), Centrica (UK), Coca-Cola European Partners (UK), Colgate Palmolive Company (US), Diageo plc (UK), Fiat Chrysler Automobiles NV (Italy), Ford Motor Company (US), GlaxoSmithKline (UK), Harmony Gold Mining Co Ltd (South Africa), KAO Corporation (Japan), Kirin Holdings Co Ltd (Japan), Kumba Iron Ore (South Africa), L'Oréal (France), LG Display (South Korea), Metsä Board (Finland), Mitsubishi Electric Corporation (Japan), Royal Bafokeng Platinum Ltd (South Africa), Sony Corporation (Japan), Suntory Beverage & Food (Japan), Toyota Motor Corporation (Japan), and Unilever (UK).

58 GWP – 'What is IWRM'? Global Water Partnership, http://www.gwp.org/The-Challenge/What-is-IWRM/

In developing countries which have a weak institutional capacity for change, the monitoring of progress towards IWRM shows generally very slow progress[59]. One of the factors limiting the speed of the process in those contexts is that the water sector is predominantly informal, especially in rural areas where it is based to a large degree on self-supply and local, informal water institutions. Regulatory influence is minimal and laws, prices and policies often function poorly or patchily. In contrast, the water sector in developed countries is more formalised and to a large degree the behaviour of the sector is under direct regulatory influence. The chance of success for IWRM at the national level goes hand-in-hand with the development of national governance structures and an approach towards a more formal water sector (Hassing et al, 2009). At the local level, IWRM principles still guide water resources management, but initiatives and actions are taken by communities of their own accord.

This author nevertheless concludes: 'The IWRM process takes a long time, but that does not mean that its principles and goals do not need to be pursued in a world of increasing scarcity and competition for water' (Hassing et al, 2009, p.7). In contexts of intense pressure on water resources, the implementation of IWRM is likely to include 'delicate, time-consuming and difficult negotiations and trade-offs, as well as a change of mindset for farmers' (Hassing et al, 2009, p. 5).

2.7 Water stewardship and IWRM compared

How do water stewardship and IWRM compare?

There are significant similarities between water stewardship and IWRM:-

- they share goals of equity, environmental sustainability and economic welfare[60];
- both aim to mobilise multiple actors, and both, to be implemented, require collective action;
- both require evolution of mind-sets: stewardship requires evolution of corporate culture whilst implementation of IWRM entails evolution of institutional mentalities (away from sector 'silos' to collaboration between ministries and sector agencies (i.e. 'integration')).

Differences between water stewardship and IWRM exist. As for stewardship:-

- it is especially a water user's perspective. As one international water specialist, who has followed the emergence of water stewardship, commented: 'stewardship is really about the bottom-up part of IWRM, the participation by water users at catchment level'. This helps to better identify the value of water, rather than just its economic price.
- under stewardship, companies **voluntarily** enter into assumption of responsibilities: i.e. voluntary actions, although pushed by peer example (laggards exist too);
- stewardship starts at the individual 'site' (the plant/premises of the actor in question), but goes beyond to the catchment (AWS, 2014).

As for IWRM:-

- it is typically government adopted and government-led;
- based on laws which typically set out obligations[61];
- it operates, mostly (though not exclusively[62]), from central to local[63], and tends to emphasise planning reforms;
- it is institution and procedure 'heavy'. As noted above, the reforms required to implement IWRM can take decades, in all countries (Hassing et al, 2009);
- it should lead to change in practice, but has been conventionally focussed on the following elements: policies, laws and plans; an institutional framework; use of management and technical instruments; and investments in water infrastructure (Smith and Jønch Clausen, 2015);
- in the case of IWRM, collective action is described as a participatory approach where stakeholders are part of the decision-making process and each stakeholder needs to assume responsibility (GWP, 2000, p.15, emphasis added):-

59 There are many perspectives as to why this is the case; limited understanding of waters value to the economy, poor water allocation mechanisms, multiple communities of practice that fail to overlap, for example, groundwater tends to work in isolation to surface water, little overall hydrological system thinking, and despite the obvious links between climate change and hydrology, this fails to gain adequate political support in many countries. In many countries water has often sat uncomfortably between agencies responsible for irrigation, and those for environment. Water for energy generation and hydropower has become a separate discussion, despite the resources the energy sector has available, and its clear need for water (Dalton and Smith, 2014).

60 'Efficiency' is not actually mentioned, but is included under Sustainable Development Goal 6, Target 6.4 to '…substantially increase water-use efficiency…'. This presumably builds upon the call under the Johannesburg Plan of Implementation set in 2002 following the World Summit for Sustainable Development for '… all countries to develop integrated water resource management and water efficiency plans by 2005…'.

61 The enforceability of those obligations will vary from country to country, jurisdiction to jurisdiction.

62 Some IWRM implementation has been local activities with the aim to scale up to catchment and basin level.

63 As for opportunities for locally-driven initiatives within IWRM, see Section 5.1.

> 'Participation is about taking responsibility, recognizing the effect of sectoral actions on other water users and aquatic ecosystems and accepting the need for change to improve the efficiency of water use and allow the sustainable development of the resource. Participation will not always achieve consensus; arbitration processes or other conflict resolution mechanisms will also need to be put in place' (GWP, 2000, p.16).

In the case of stewardship, it is 'a **stakeholder-inclusive** process that involves site and catchment-based actions' (AWS, 2014, emphasis added). As for responsibility, the AWS standard begins with the observation that pressure on water resources is a threat to people and nature alike, due to a lack, currently, of 'responsible water management' (AWS, 2014, p.4, 'Preamble'). Then, a little later in the same document, it is stated that the AWS standard 'provides a consistent global framework for sites to undertake **responsible** water stewardship...' (AWS, 2014, p.9, emphasis added).

In summary, both the objectives and core elements of the two policy approaches/frameworks are very similar.

How, then, is 'stewardship' different? The answer, say Morgan and Orr in a 2015 WWF/IFC paper, is that water stewardship embodies 'taking care of something which one doesn't own' or 'looking after an asset or resource on behalf of others' - as well as, presumably, themselves[64]. At its core, water stewardship is 'differentiated because of whom it infers is contributing to water resource management' (private actors) and also because they are 'taking action on behalf of other users'.

Morgan and Orr continue:-

> 'If IWRM is considered as actions by an authority mandated by the State to manage water resources on behalf of all water users, then water stewardship can be considered as actions by water users themselves to contribute to the management of the shared resource towards public-good outcomes. 'Water stewardship is, therefore, about non-traditional, private actors increasingly involving themselves in the management of the common pool-public good regarding water' (Morgan and Orr, 2015).

Stewardship brings with it, in other words, the explicit responsibility of each actor to contribute to the public good. This is central to the concept of water stewardship, and what it demands of private companies is a central question for consideration by private companies, including in particular 'for profits'. Where there is a tension between individual and collective interests – where the need for a trade-off presents itself – will a given water steward pursue its individual objective or opt for collective benefit? How far is it within corporate water behaviours to promote the public good? And, what does 'public good' mean in this context, as compared with 'creating shared value'?

For observers of IWRM who are frustrated by its slowness, and are promoting water stewardship to make up for IWRM's failures as they see them, the question arises of how long the evolution of corporate culture and practice in water stewardship will actually take, based on current trends? In other words, compared with evolution of public sector mind-sets under IWRM, what will be the time-scale of change to corporate water behaviours in line with stewardship? As referred to in Section 1.1, private companies commonly see themselves as agile, but how quick will they be to adopt, as part of their culture and values, corporate-wide and 'corporate-deep', the principles and practices of stewardship as set out by the international standards? As raised earlier in Section 2.3, working towards collective benefit may enhance, possibly, the advantages of companies' competitors, minimise companies' negotiating power (for water), and raise companies' commitment levels and therefore possible liabilities – all of which come with direct and indirect costs.

As to what companies engaging in water stewardship are *not* encouraged to do, the CEO Water Mandate's Guide to Responsible Business Engagement (referred to in Section 2.2) warns of the risk for companies of 'policy capture' – i.e. taking over 'Bargaining' in Perry's framework in Table 1. Meanwhile, the rules and regulation with which water stewards are to comply under the AWS standard are those of government, as the leader of 'Codification' in Table 1. These issues are further discussed in Section 6.2.

64 This corresponds with the definition of 'steward' (the noun) in the on-line Oxford dictionary which includes the following meaning: 'A person employed to manage another's property, especially a large house or estate', amid others as follows: 'A person employed to look after the passengers on a ship, aircraft, or train'; 'A person responsible for supplies of food'; 'An official appointed to supervise arrangements or keep order at a large public event, for example a race, match, or demonstration, to a college, club, or other institution'; or short for 'a shop steward' (in a trade union).

2.8 Water stewardship and IWRM – connected?

One observer of the water sector pointed to, in his view, a major disconnect between the efforts to implement IWRM led by governments on the one hand, and the water stewardship initiatives of private companies on the other. According to this view, the multi-stakeholder fora promoted by the 'brokers' of water stewardship are designed to bridge the public-private gap, but dialogue between 'the government process model of IWRM' and the 'privately-driven outcome-oriented model' of stewardship is currently limited. 'Water stewardship has not, as yet, found its place adequately in public policy debate'[65].

The person in question did not go on to say why he thought this was happening. One reason could be a concern of companies that water stewardship initiatives will be absorbed into governmental processes and thereby lose their capacity to be agile, and possibly their influence. Alternatively, there is sometimes a tendency in the international development community to turn interesting new lines of thought and action into 'fads' by over-selling them and ignoring existing work[66]. In this context, that would manifest itself in promoters of corporate water stewardship ceasing to think of and interact with policy processes led by government, creating parallel mechanisms that effectively add more silos to already disaggregated processes – further challenging the difficult 'integration' of IWRM. Yet in most cases, especially in developing markets, business needs to partner wisely with government to make sure it can operate efficiently.

An alternative view might simply argue the benefits of IWRM. Whereas stewardship starts with actions at individual sites and works outwards into the catchment, IWRM can begin with 'big picture' planning, at national and river basin level. That 'wide-angled' planning is useful for decision-making by elected leaders on behalf of their constituencies as to what is to be grown where, for example which water-using industries are to be encouraged and where? It may make good sense in regions prone to drought to promote the cultivation of annual crops, rather than perennials

Establishment of a new village chief, Burkina Faso © Shutterstock/Gilles Paire

65 That is despite early recognition in 2000, at least on paper, that the private sector needed to be involved in IWRM (GWP, 2000).

66 One of the authors of this paper visited the Grootvlei Mine and the Grootvaly/Blesbokspruit Wetland Reserve in South Africa in 2006. Waste water from the mine contained a high concentration of salts and sulphates. A process called BioSURE, developed by local sewage company, ERWAT, agreed to take the wastewater from the mine and use it as an accelerator mixed with raw sewage to reduce sulphates from around 1500 mg/l to <250 mg/l. Mine water is pumped from underground and overland for 2km to the BioSURE plant. BEMA Gold, the mine owners at the time financed the surface pipe to the BioSURE plant and were to cover operating costs to ERWAT. Grootvlei Mine had to pay this operating cost as part of the Polluter Pays Principle under the National Water Act. The success, or otherwise, of this public-private partnership (PPP) is not known, but it highlights that stewardship approaches have been used through PPP mechanisms for some time. An update on the state of the Blesbokspruit can be found in Ambani and Annegarn, 2015.

(citrus)[67]. The former offer more scope for flexibility. And, within IWRM there can be an emphasis on a 'users-up' approach as well as a 'big picture institutions-down' process (an example is considered in Section 5.1).

As for speed of response, while IWRM processes are not in themselves designed as mechanisms for quick reaction, there is no reason why governments cannot use the IWRM framework to create capacities for crisis response[68].

To the question why should IWRM and stewardship be connected, one international water policy specialist commented that water stewardship can carry out the function of supporting and 'waking-up the economic pillar of IWRM' by 'directing the attention of river basin organisations and other public agencies, who may tend to see IWRM solely in terms of command-and-control'. The economic aspects of water resources management including critical and stabilising economic drivers and incentives may be housed within (or more influentially within) National Chambers of Commerce and similar organisations where IWRM may be unknown.

Another answer to that question is that without that connection, there will not be accountability of stewardship initiatives via the long route –see Annex 4. The issue of connection between water stewardship initiatives and IWRM is further discussed in Section 4.15.

2.9 An analytical framework for assessing corporate 'water behaviours'

Figure 4 presents a categorisation of corporate 'water behaviours' as an analytical framework for identifying and differentiating how companies manage water and water-related investments. A company may exhibit different behaviours at different times, and, in the case of a large company or group of companies in a multinational, it may do so in different locations at the same time.

The key interest in setting out the framework in Figure 4 is to assess how far companies have reached in relation to water management in catchments beyond the 'factory fence', i.e. beyond Steps 1-3 in the WBCSD, WWF and AWS scales as shown in Figure 3. As shown in Figure 3, while the achievement of water use efficiencies (reduction in volume of water utilised per unit of production) can be a contribution to better water management, stewardship goes beyond efficiency at any individual plant or premises to include an understanding of, and response to, water challenges within a catchment.

The horizontal axis in Figure 4 defines a spectrum of corporate approaches and actions from 'exclusive' - narrow vision, without collaboration with other stakeholders in the catchment - to 'inclusive' - engagement in collective action with other stakeholders in the catchment as per the WBCSD, WWF and AWS standards/guides.

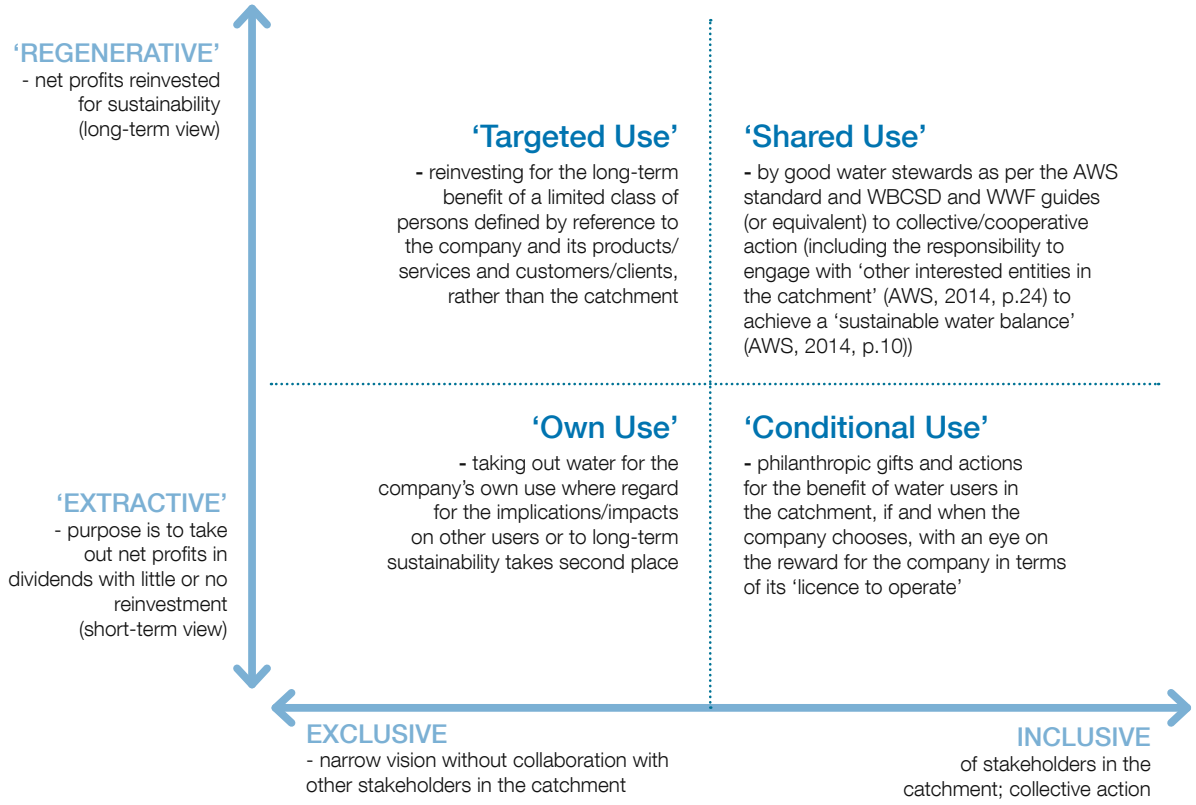
The vertical axis in Figure 4, meanwhile, sets out a spectrum of behaviour from 'extractive' at one extreme to 'regenerative', for long-term sustainability, at the other. It has been seen in Section 2.1 that long-term sustainability is a specific objective of water stewardship as defined in the AWS standard (AWS, 2014, p.6 and 10). In their culture and values, companies may be more or less inclined to pursue a 'regenerative' as compared with an 'extractive' role in society.

67 Recognising that the drier parts of the world have higher levels of solar radiation and therefore are best suited to specific types of crops and can often support more intensive cropping schedules.

68 When water crises hit, whether drought or flood, the likelihood is that policies that have been in discussion and gestation for a number of years will be taken 'off-the-shelf', instead of attempting to design new policies from scratch. An analyst of floods and flood management in the UK (Penning-Rowsell at al, 2006) points to the 'signals' within policy debates which subsequently became 'ingredients' of policy change and invites policy-makers and analysts to direct their efforts at identifying those signals in anticipation of the next water crisis (in this case, a major flood event), especially in countries where those crises are reoccurring rapidly. Major flooding events are an example of extreme events that provide a 'window of opportunity' to modify policy and practice while decision-makers and public are temporarily more sensitised. Penning-Rowsell notes that policy responses which appear at first sight to be innovative may often be based on ideas that have previously been the subject of extensive debate.

According to one person consulted during this study, the governmental response to the drought in the Murray-Darling basin in Australia similarly drew on the well-known and long discussed proposal for drawing up of a single drought management plan. As Whittington et al comment in a recent article: 'There is no alternative but for the State and its partners to roll up their sleeves and do the hard analytical work required to understand the behaviour of complex hydrological systems and to determine the economic costs and benefits of various possible policy interventions to different stakeholders'. (Whittington et al, 2013). There are no shortcuts.

Figure 4. Categorisation of corporate 'water behaviours'



The lower left-hand quadrant in Figure 4 toward the extractive end of the spectrum corresponds to attitudes and actions designed to secure abstraction of water for the company's own use where regard for the implications for, and impacts on other users, and regard for long-term sustainability take second place and a shorter-term perspective prevails. One business representative consulted during this study called that extractive type of behaviour in relation to water 'wringing the flannel' – i.e. following that metaphor, where companies pursue a policy which tends, self-servingly, to squeeze as many drops as possible out of the water resources in a catchment for their own use, as indicated by the title of the quadrant, 'Own Use'.

The bottom right-hand quadrant in Figure 4, called 'Conditional Use', highlights philanthropic giving designed to afford better water access for other stakeholders within the catchment, although on an 'if-and-when-the-company-feels-like' basis, and with an eye on the rewards for the company in terms of its 'licence to operate' - an entitlement to its existing water allocation at any given location (with the possibility to withdraw more). This category of water behaviour is discussed further in Section 5.5.

The upper left-hand quadrant in Figure 4 is called 'Targeted Use' and relates to companies that reinvest net profits in improvements to water management according to a long-term view of sustainability, but where the actions of the company are not 'inclusive' in the manner required by stewardship according to the AWS and EWS standard. An example of 'Targeted Use' is given in Section 5.5.

The top-right quadrant in Figure 4, called 'Shared Use', corresponds with water stewardship as defined by the AWS and EWS standards and the guides to collective/cooperative action proposed by WBCSD and WWF (Figure 3). Promoters of the international guides/standard will be looking to see evolution of corporate water behaviours from the bottom-left to the top-right quadrant in Figure 4.

As for where IWRM appears in Figure 4, IWRM is, like stewardship, designed to be 'inclusive' and 'regenerative' which means that it also sits in the top right-hand quadrant, as a process designed to achieve 'shared' water use.

As regards engagement by companies in relation to water policy, water stewardship is, according to the AWS standard, designed to achieve 'good water governance' as one of four outcomes. That includes systems of laws, regulations and policies which are 'effective, efficient and enduring' (AWS, 2014, p.9, emphasis added). Collective actions of water stewardship are intended to contribute to putting in place and maintaining those systems. The issue of companies' engagement in water policy is discussed in Section 4.16.

Summary and key points – Section 2

This section has set out the key elements of water stewardship as described in the three leading international guides/standard. The CEO Water Mandate has set out a guide to managing integrity in water stewardship initiatives, including in companies' engagement with water policy. Reactions to the AWS standard has been mixed – some positive, some negative and others nuanced. It is early days in promotion and adoption of the water stewardship standards[69] and generally too soon, therefore, to assess the success or otherwise of specific water stewardship initiatives in terms of their development impacts. Similarly, the system of certification under the AWS standard is work-in-progress, with some companies certifying sites, whilst others say they are not intending to do so.

The objectives and core elements of water stewardship are very similar to those of 'integrated water resources management' (IWRM). There is, however, currently, a disconnect between the efforts to implement IWRM led by governments and the water stewardship initiatives of corporates. An analytical framework for assessing corporate 'water behaviours' has been proposed in Section 2.9. This will be used later in this paper (in Section 5.5) to assess the current status of progress of water stewardship as against the international standards and guides.

- 'Water stewardship' is defined by the Alliance for Water Stewardship (AWS) in terms of social, environmental and economic goals as well as stakeholder-inclusive processes, for long-term sustainability. Both companies and other actors can aim to be good 'water stewards'. Good water stewards will, first, comply with laws and regulations.

- According to the AWS standard, water stewardship starts at the 'site' and goes beyond to the catchment. Good water stewards understand their own water use and the catchment context and are encouraged to engage in individual and collective actions beyond the factory fence.

- The AWS standard further characterises water stewardship in terms of creation of 'shared value' (evoking Porter and Kramer, 2011).

- Water stewards are called upon by the AWS standard to use water resources responsibly, i.e. with efficiency of use and 'reducing the volume of water abstracted where managing sustainably so demands'.

- The Integrity Principles proposed by the CEO Water Mandate and Water Integrity Network highlight the need for transparency and accountability in water stewardship initiatives.

- Representatives of companies consulted during this study commented on the usefulness of the AWS standard as a guide to companies on water management – it is seen as the best standard tool available (at least, currently). Some companies are testing and applying the AWS (or EWS) standard, or in an adapted form. Other companies already have their own codes which may be similar to AWS/ EWS.

- There are many different company views on what water stewardship is. Some corporate representatives commented that the steps in the AWS code and the responsibilities that water stewards are called upon to assume are demanding.

- A key function of water stewardship initiatives is as a catalyst, where private water stewards prompt governments to take action to improve water resources management. In that, the role of 'brokers', NGOs and donors, is important.

- The goals of IWRM are similar to those of stewardship and the processes under each entails mobilising multiple actors in collective action. Both require evolution of mind-sets: water stewardship requires evolution of (private) corporate culture; implementation of IWRM entails evolution of (public) institutional mentalities.

69 A revised version of the AWS standard is to be produced, according to AWS.

- Water stewardship emphasises actions by water users, 'bottom-up'; IWRM (mostly, though not exclusively) operates from central to local levels, and tends to emphases policy reforms. Under water stewardship, companies voluntarily assume responsibilities; IWRM is based on laws which typically set out obligations (which may or may not be enforced).

- Water stewardship - some commentators say - requires 'taking action on behalf of other water users' – a responsibility to the public good.

- A key question arises as to how far the water stewardship initiatives of private companies and the efforts to implement IWRM led by governments are connected. One commentator suggested that 'water stewardship has not yet found its place in public policy debate and action'.

Harvesting wheat © Shutterstock/prudkov

3. What companies talk about most

*'Changing weather patterns are already affecting our and our suppliers' agri-*businesses'.
(Representative of a multi-national)

It is *'easier to move unilaterally, and more difficult to advance collectively',* but catchment water management *'requires collaborative approaches'.*
(A company representative)

'Companies are struggling to put numbers on water risks to support the business case for action'.
(An advisor to companies)

This section describes what companies are doing in relation to water management and stewardship according to what they talked about most readily in the interviews conducted during this study. It provides a picture of companies' concerns and interests, as well as insights into their motivations.

3.1 Water risks

As noted in Section 1.1, the companies most visible in debates relating to water management and stewardship are those whose businesses involve significant water use. Company representatives interviewed report fears of disruption to company operations, with cases of water access constraints already encountered in contexts of dryness or drought (less as a result of flooding incidents[70]). These are more commonly water quantity than water quality issues. Water quality is a particular concern for food and beverage companies including those who sell bottled water. A supplier of bottled water highlighted natural (mineral) water as a special case because the water is not treated, thereby putting great emphasis on quality. Danone Waters, for example, supports and initiates local projects to protect the health of the groundwater aquifers that are the ecosystems on which this water supply depends (Danone Sustainability Report, 2014).

The scope of operations of multi-national companies is, by definition, extensive which means they may face water risks in a range of contexts. That said, in the key informant interviews there were recurring references to major business markets, notably in India, China, US/California, Brazil, Mexico and South Africa[71], where there are major water traps for the unwary.

A big foods company 'looked at 25 key growing regions to develop a 'heat' map of our greatest water risks and materiality to our business', then did a 'deep dive' assessment of key locations. Similarly, other companies consulted during this study reported that they are carrying out water risk assessments at their sites in order to better understand water risks - environmental, societal, operational, regulatory, reputational and financial. As one executive noted, water risk assessments aim to give the company 'a clear overview of its impact on water scarcity and pollution at a local level'. Projects based on the results of the water risk assessments are then included within a 'roadmap' for sustainable water management, including target-setting[72]. The source vulnerability assessments of Coca-Cola have apparently been an example to emulate.

The extent to which water risk alone is, or is not, a motivator of action by companies is discussed in Section 3.8.

70 The major floods in Thailand in 2011, referred to in Section 1.1, are a notable exception.

71 These countries are referred to in disclosures to CDP.

72 Care must be taken here in site selection during assessments. Risks from what, and to who/what, are important to understand in context. Dealing with cases that are 'high-profile' may be needed - may show that companies are media 'savvy', and may be efficient for companies - but may not be at the sites with the highest water risks.

3.2 Water and climate

The company sustainability reports reviewed during this study differ in how they talk about climate and its effect on water – whether they talk of climate and water problems as already occurring, as thought to be imminent, or more distant. For example, the forms of words vary from:

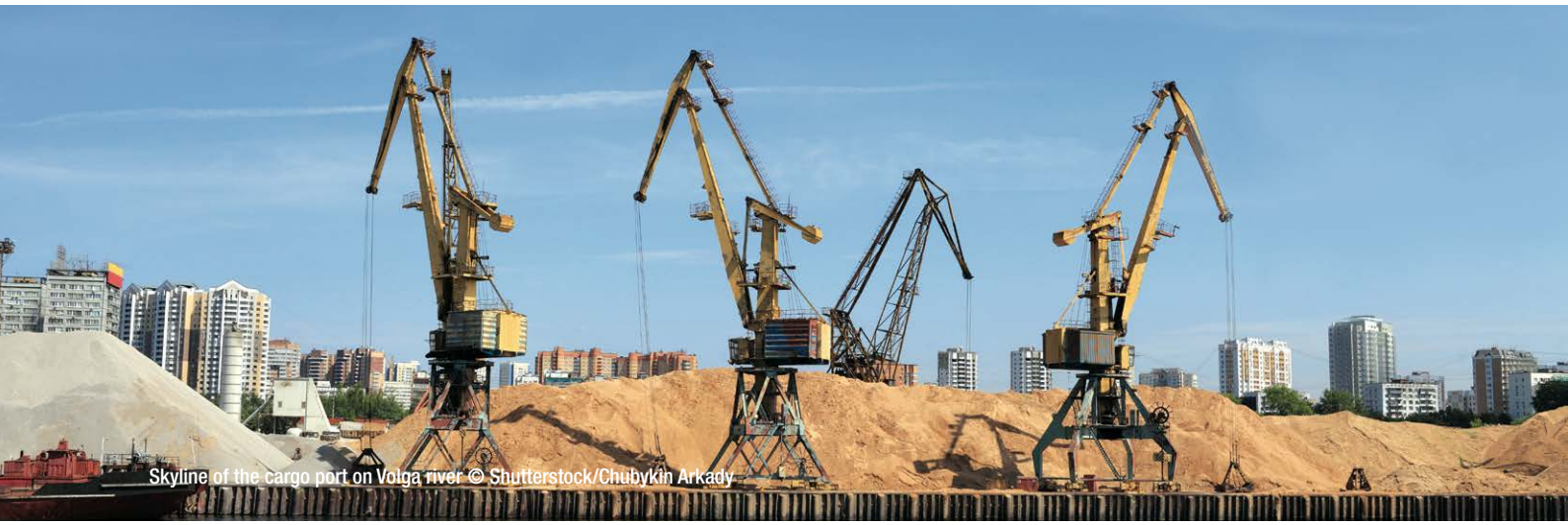
(i) 'climate change is taking effect' and 'has far-reaching consequences'; to
(ii) 'there is growing evidence of climate change' meaning that the company must work with others to 'combat' it; or to
(iii) 'the effects of climate change have the potential to impact our business and society at large' so that 'it could affect our business and supply chain in the long run'.

In the case of (ii) and (iii), the question arises how far a sense of urgency to tackle resource scarcity (including water) exacerbated by climatic conditions is 'pervasive' in corporate culture and values.

As an example of a company statement aligning with point (i) above, Olam International's Corporate Responsibility and Sustainability Report 2014 (p.21) notes that 'changing weather patterns are already affecting agriculture' including its own and its suppliers' agri-businesses (products such as cocoa, coffee, rice and cotton). A representative of a large South African-based company said: 'The water supply in the basin where the company's principal plants are located is adequate now, but with the country, it seems, entering into a dryer period, future supplies cannot be guaranteed. It is going to be important to put in place mechanisms and solutions before there is a major problem. The company's plants use a lot of water; without it, the business could not function. We are, consequently, working to ensure our security of water supply'.

The representative commented that: 'If a company does not look at and anticipate potential problems 'beyond the fence' and adopt a stewardship type approach, those problems will come back to bite companies'. That aligns with points (i) and (ii) above. The President of ICMM noted in the industry guide to stewardship that: 'Without water, there can be no mining' and 'water is a 'critical resource for all mining and metals operations, used in every process from dust management, power generation and mineral processing to the drinking and sanitation needs of employees' (ICMM, 2014). Wastewater is also a key issue for mining and metals companies. Some big projects, e.g. in Chile and Peru, have been suspended or blocked because of water problems (source: key informant interview). Improving water management, says the ICMM, is not only about better operational efficiencies, but also about issues beyond the boundaries of mines, including competition for water resources and the effects on local communities. Mining investments are typically long-term, e.g. 30 years or more, and mines are location-specific. That makes divestment or relocation less of a viable option, and therefore corporate (human) capacity to understand hydrology and impacts a higher priority. The 'sunk costs' of mining resemble large hydropower projects.

As an example of a medium-sized business registered in a developing country – category (iii) in Box 1 in Section 1.3 (i.e. not part of a multi-national group) - the leader of a company in East Africa which produces flowers for the international market in Europe explained the water situation as it is already affecting the company's business and c.1,000 employees, - thereby aligning with (i) and (ii) above - and talked of the company's responses, as set out in **Box 6.**



Skyline of the cargo port on Volga river © Shutterstock/Chubykin Arkady

Box 6. Water concerns of a medium-sized business registered in a developing country

The timing of the rainy season is quite stable, but the amount of rainfall varies and is decreasing. There is pressure on the water resources in the catchment, due to population growth and in-migration, with abstraction of water occurring upstream without permission. The water charges payable to the local water authority are not excessive, but the authority needs to be stricter, and there is also wastage of water by small farmers. This is causing a problem for downstream users and there is concern also that volumes of available water in the dry season will reduce. Meanwhile, groundwater levels are dropping. The company does not, it said, use all of its (paper) water right. The company is a member of the local water user association started by the government. There needs to be better planning and better coordination of rights to withdraw water. The company is helping build water points and water storage tanks for local communities, including those of the company's workers, although it notes that 'it is the government that is supposed to be building water infrastructure'. The company is going for certification. Its motivation for that 'is partly our own conscience including the wish to help local communities (including those where the company's workers live) whose members were obliged to walk several kilometres to access clean water during the drought'. Hence, the help the company has given to building water points and tanks.

3.3 Accounting

In terms of accounting for water risks and associated costs, it is clear from many comments during the interviews that companies are, as one person put it, 'struggling to put numbers on water risks to support the business case for action', including investment. As one international climate specialist expressed it:-

> 'A key concern for companies is their supply chain water risk exposure, particularly in agriculture, but they are having trouble quantifying it and valuing it. As long as the risk is un-costed, water will remain a CSR conversation without being engrained in business strategy and actions'.

In other words,companies still need to work out the cost implications of moving from Step 3 in the international guides/ standard in Figure 3 to Step 4 in Figure 3. This keeps CSR reporting focused on a small number of narrow issues relevant to business, rather than a broader range of issues relevant to business and society at large.

Several persons consulted said their companies use an internally-fixed shadow carbon price for quantifying avoided emissions, but added that water pricing was not so simple. Thieriot and Tan (2016) highlight the polar opinions amongst investors over shadow pricing, pointing out for example, that shadow pricing does not take into account pollution levels. The challenge is to bridge qualitative statements on water risks with a quantitative valuation of those risks.

Trucost and Ecolab introduced in 2014 the 'Water Risk Monetizer' for valuation of water projects in water scarce locations. The monetizer proposes a methodology for factoring the potential impact of water risks in financial terms, among other risks considered in planning and capital allocation, by attributing virtual dollars that support the investment case[73].

Morgan and Orr argue for accounting to go beyond the 'language and valuation approaches employed in finance that resonate for corporate managers and investors' in order to take account of economic factors which are present in the catchment around corporate premises/plants, encompassing not only 'company-related risk linked to the facility's performance', but also 'basin-related risk linked to location of the facility' (Morgan and Orr, 2015, p.17) – i.e. the value of water not only to companies, but also to the 'economy, society and nature' (Morgan and Orr, 2015, p.15). Identifying the 'value at risk' should make it easier for attention and investment to be directed to minimising those risks.

Christ and Burritt (2014) note the need for tools to support business 'water accounting'. That involves, they advise, going beyond the bounds of 'traditional' accounting to take note of information in meteorology, hydrology and engineering, whilst also extending the scope of analysis beyond traditional financial analysis to take account of the economic costs associated with water-related decisions.

Several people interviewed noted that principles for accounting for social and natural capital are generally less well accepted, although there are hopes that the natural accounting protocol - see **Box 7** - as drafted, will change that. Natural capital is the 'stock of renewable and non-renewable natural resources, e.g. plants, air, water, soils, minerals, that

73 One person consulted during this study commented that the Water Risk Monetizer does not capture reputational risk. Thieriot and Tan (2016) state that based on a survey of 70+ investment professionals/asset owners from 50+ financial institutions/funds, Bloomberg's Water Risk Valuation Tool was 'unheard of' by 61% of those surveyed.

combine (e.g. in ecosystems) to provide benefits to people. Natural capital accounting, the valuation of nature's benefits, is a way to make the contribution of nature to livelihoods and economies visible (Conservation International, 2016). 'If a business is not including natural capital in decision-making, it may be missing risks and opportunities' (Conservation International, 2016). The Protocol justifies the business case by explaining that it can help to effectively 'reduce risks' - many of which have been raised by Orr and Pegram (2014) from a water management view point, such as operational, legal and regulatory, financial, reputational, and societal. Many of the examples the Protocol has used are water related, such as water availability and sourcing concerns, water scarcity and drought, and new water regulations.

Box 7. The Natural Capital Protocol

The overall vision of the Natural Capital Protocol (NCP) is 'to transform the way business operates through understanding and incorporating their impacts and dependencies on natural capital. The intent is not to invent new methods, but to build on the front runners that already exist, fill the gaps, and enable a period of experimentation in the market via different sectors and geographies. This will enable lessons to be learnt and the current gaps to be better understood. It is anticipated that the resulting framework would be the starting point to inform future standards'.

The aim of the NCP is to 'enable business to assess and better manage their direct and indirect interactions with natural capital, and will:-

- provide clear guidance on qualitative, quantitative and monetary valuation of natural capital impacts and dependencies and when to apply which level of assessment;
- be framed for use in different business applications;
- provide guidance on the applicability of the protocol at different organizational levels (corporate, project, products, site) through the value chain;
- be applicable to all business sectors across all geographies'.

The NCP will 'support companies in their decision-making and can be used for a range of applications, including risk management, exploring new revenue streams, improving products and value chain innovation, as well as preparing for future reporting and disclosure'.

Source: Natural Capital Coalition (2015) and http://www.naturalcapitalcoalition.org/natural-capital-protocol.html

The Natural Capital Protocol is a new framework designed 'to help generate credible and actionable information to help businesses measure and value their impacts and dependencies on natural capital' (Conservation International, 2016).

The potential for natural capital accounting has been illustrated by pilot projects in the UK presented at a public meeting in London in April 2016[74]. The Forestry Commission is a government department responsible for forestry in England and Scotland and a major land owner which manages public forests for the benefit of the general public which has access to those forests. The Forestry Commission has applied natural capital accounting to value the forest estate including its broader social/cultural and environmental worth, i.e. beyond that solely of the timber. The pilot has demonstrated that this accounting exercise was - the representatives of the Commission and its advisors (Eftec[75]) reported – viable despite difficulties in assigning numbers to those wider values[76]. One value which current accounting practices and rules do not take account of is that of green water - the water in the soil. It is currently ignored and taken as being free. The Natural Capital Protocol 'has the potential to do that', opined one expert, 'with some development of the water aspects still needed'. Currently, they are, he said, 'too simplistic'.

The next stage of the challenge is, then, further development of the protocol and translation, progressively, of the above kind of pilot study conducted in the UK into mainstream practice. The case could surely be made that all public bodies responsible for management of significant portfolios of natural assets should, by law, take account of natural capital alongside other asset values. The question arises: what role should private companies have in relation to these innovative accounting principles? Will accounting principles and practices be changed so that there is a new rule book which companies are obliged to follow? Despite the possibility - likelihood - of resistance to changes in accounting standards, the efforts to adopt natural capital accounting will be very important[77]. Some environmentally

74 The event was organised in London by the Institute of Chartered Accountants in England and Wales (ICAEW) on 26th April, 2016 on: Accountants by Nature: Experiences of applying large-scale corporate natural capital accounting in England'.

75 Eftec (undated),'What is natural capital', http://www.eftec.co.uk/services/natural-capital

76 Accountants applying traditional accounting principles admit to difficulties in assigning values to things such as the good will of a business.

77 A representative of an oil and gas company commented that corporates would be ready to go down the national capital accounting route if fund managers took note of natural accounting values alongside conventional financial metrics (profit, rate of return etc.).

beneficial interventions will be more appropriate for business investment than others - the case being strongest for natural assets such as soil and water (Brown et al., 2016)

The related question arises as to how climatic variability is to be accounted for in natural capital accounting. Will its effect on natural resources somehow be represented in contingencies at arbitrary levels (e.g. 5% - 10%) in accounts? One option is to legislate. For example, the water utilities in England and Wales are obliged, by law/regulation (Government UK, 2012) to produce, every five years, long term water management plans setting out how the company intends to maintain the balance between supply and demand for water over a 25 year period. Future demand takes into account population and property projections, water use data and trends and a range of other information to forecast how the components of demand for water are likely to vary over the next 25 years, including weather conditions and climate change.

The 2015 plan of Thames Water illustrates how the uncertainties inherent in long-term planning are handled (Thames Water, 2015, p.15): '… almost all the components of supply and demand together with their associated planning assumptions are subject to uncertainty and this is expressed and handled in the plan through the concept of 'headroom'. There is an industry standard procedure for calculating headroom as laid down in the UK government regulations. As Thames Water says, 'target headroom' is the minimum buffer that a prudent company should allow between supply and demand to cater for uncertainty in the overall supply demand balance and meet its agreed levels of service'.

3.4 Water 'supply-demand gap'

As for water resources risks beyond companies' plants/premises, the report published by McKinsey & Company in 2009 advocated national level analysis of water resources to assess the 'water supply-demand gap'.

The McKinsey report was the first step in the work commissioned and carried out by the 2030 Water Resources Group[78]. The 2030 Water Resources Group is active in some water debates, both as a grouping and through its individual corporate members (as evident from the key informant interview with a senior representative of its management team)[79].

The starting point for the McKinsey report was that the 'water sector' was failing to address water challenges and that urgent action was needed. Many countries 'plan for development and growth assuming that water will be available when and where it is needed'. (McKinsey, 2009, p.34). 'Decision-makers and stakeholders need to re-visit the drivers of the [water supply-demand] gap', whether the drivers are 'endogenous', i.e. within 'their direct influence, or 'exogenous' (e.g. climate change). Examples of key drivers are agriculture and energy generation (McKinsey, 2009, p.88). The report asks: 'If water is really a limiting factor, could an economy shift to a less water-intensive manufacturing base, and, if so, how?' (McKinsey 2009, p. 89). The report adds: 'A robust fact-base can also spur focused investments from the private sector as a key engine for reform' (McKinsey, 2009, p.21).

In terms of the McKinsey report's analysis of specific case study countries/areas – South Africa, India, China and São Paulo state in Brazil – the conclusion of the report is that technical solutions (if the optimal ones are chosen) can 'close 100% of the [supply-demand water] gap projected to 2030' (McKinsey, 2009, p.70). High on the list of solutions are those for greater agricultural water productivity by farmers and food value chain players - drip or sprinkler irrigation, improved seed varieties, and reductions in food waste - while leakage reduction will be key to municipal water savings. 'For each of the four case study countries/areas, technical solutions combining water supply and productivity measures are in principle available to close the [water supply-demand] gaps identified for 2030' and 'those solutions need not be prohibitively expensive' (McKinsey 2009, p.70).

The first question arises, commented one person interviewed during this study, whether these kinds of technical solutions constitute the 'low-hanging fruit' while the more time-consuming reforms of institutions are side-lined. By way of response, the McKinsey report notes that the policy regime will not and cannot remain 'static' (McKinsey,

78 The 2030 Water Resources Group is hosted by the International Finance Corporation, a member of the World Bank Group: https://www.2030wrg.org/. According to the 2030 Water Resources Group's website, the 'global private sector partners are; Nestlé, the Coca-Cola Company, Pepsi-Co and SAB Miller, while also active at global level are the following international institutions: International Finance Corporation, International Bank for Reconstruction and Development, Swiss Development Cooperation, Global Green Growth Institute/Korea, Asian Development Bank, Inter American Development Bank, African Development Bank, Swedish International Development Agency, United Nations Development Programme, Global Water Partnership. The stated purpose of the 2030 Water Resources Group is to 'drive action on water resources reform in water stressed countries in developing economies'. It will do that, it says, by 'convening national multi-stakeholders platforms and structured processes' for 'open, trust-based dialogue' so as to 'facilitate collective action on water between government, private sector and the civil society (2030 Water Resources Group 'mission and vision': http://www.2030wrg.org/who-we-are/mission-vision/).

79 It is not within the scope of the present paper to assess the 2030 Water Resources Group's role. A separate detailed study would be required.

2009, p.4). 'These least-cost solutions … are a useful starting point in national or regional efforts to achieve long-term water resources security; they can form the basis for a 'new dialogue' between public, private and civil society that integrates water with broader economic development'. It adds: 'Such a dialogue will inevitably need to consider how to influence the size of the [supply-demand] gap itself, by weighing options to elicit shifts in a country's economic activities that have an impact on water. The dialogue will … seek consciously to make the often difficult trade-offs necessary for allocating limited water and financial resources' (McKinsey 2009, p.88, emphasis added). The question arises as to how shifts in a country's economy will be 'elicited'. Close reading of the McKinsey report shows that the authors favour market instruments: water trading and water markets, and clarity on who and how these 'trade-off's' are identified and negotiated is not provided. This aspect is further discussed in Section 5.3.

Irrigated grapes in the Huasco Valley, Chile,© James Dalton, IUCN

A further fundamental question regarding the technical solutions envisaged in the McKinsey report – namely, **the effects of drip irrigation and other on-farm techniques for agricultural water use efficiencies in the catchment, whether these really achieve water savings** – is discussed in Section 4.5[80]. As one international commentator interviewed stated.

> "We have been looking at technological solutions for decades, especially for irrigated agriculture. Yet agriculture still uses 70% of our water. If water was purely a technical and economic problem we would have solved the issues and we would all be paying the real economic cost of it."

Despite this, some 'sector re-engineering' is clearly required to improve how agriculture uses water, and boosts productivity.

As stated earlier, those companies that are consumer-facing and produce 'non-essential' products are more likely to invest in water-technologies to help close this 'supply-demand' gap to avoid having to engage in re-negotiation of water rights in basins that may face real water stress in the future. To some extent, this may keep 'business as usual', and powerful companies away from any negotiating table for future water rights (Vos, 2016). It may be that

80 Criticism of the McKinsey report has focussed on the lack of attention paid to returns flows, conjunctive use, environmental flow requirements (often set in policy), and poor recognition of the externalities created by some of the proposed solutions according to Orr and Sarni (2015).

the energy sector, desperate for water for oil and gas exploration and extraction will innovate water technology to the point where it can be used in other industries, even for consumer products. As Sarni and Pechet (2013) point out, where water is 'mission critical' we are likely to see investment and innovation.

3.5 Efficiency of water use

In terms of companies' investments to improve water management, their first focus is on water infrastructure within their own plants/premises to improve the efficiency of water use – category (ii) in the WBCSD classification of actions in Box 2 in Section 1.4. The level of investment has been considerable, though difficult to quantify (source: key informant interview). CDP asks companies to disclose the costs of reported response strategy to mitigate against reported water risks, but it does not ask companies to disclose specific amounts. Instead, they are asked to report on percentage plus or minus changes in CAPEX and OPEX year-on-year, as well as why the CAPEX or OPEX has increased, decreased or remained the same[81]. When, in their disclosures to CDP, companies cite examples of the steps they are taking to mitigate their water risks, companies generally do this at facility (site) level, although, in some circumstances, companies do report costs from a corporate-wide perspective.

As an example of those efforts of companies in terms of water use efficiencies in their production processes, Anheuser-Busch InBev works to reduce volumes of water used (hectolitres) per unit of production of beer (hectolitres). In so doing, it saves on water charges (Anheuser-Busch InBev - Global Citizenship Report 2014: p.4).

In Unilever's case, it is the water use of end-users that is a key focus –for example, the easy rinse soaps that use less water (Unilever Sustainable Living Plan – Progress Report 2014). 'Resilience of sales' features 'high' for the company, through 'sustainable consumption by the end-users of Unilever's products', i.e. a customer behavioural element: the company aims to promote water savings by households. In 2014, Paul Polman, the CEO of Unilever, expressed the company's approach to sustainability as follows: 'In an uncertain and volatile world, we cannot achieve our vision to double our size unless we find new ways to operate that do not just take from society and the environment' (Unilever Sustainable Living Plan – Progress report 2014, p.3). The company representative consulted for this study referred to the history of the UK company, Lever Brothers (prior to the merger with the Dutch company in 1930), and the model village built for employees in Port Sunlight in the north of England in the last years of the 19th century adjoining the company's soap factory to accommodate the company's staff in good quality housing with community facilities. That history clearly gave the representative a sense of the company's heritage which contributes to corporate culture and - to use the metaphor referred to in Section 1.5 - its 'corporate DNA'.

In sustainability reports, companies set out aggregate figures on reductions they have made in water use[82]. It is not a limitless process in technical terms and the rates of return on investment will become less and less as the technical limits are approached. An academic consulted during this study highlighted the point at which 'marginal returns on investment in infrastructure will drop substantially'. Companies may be tempted, said one expert, to hold back some of their scope to increase efficiency in case in future it is required by a regulator or other government body to reduce its volumes of abstraction (i.e. a future negotiation). Another independent commentator agreed that companies will tend to defer achieving maximum efficiency, leaving a margin for later - for when 'the pinch really bites', instead favouring actions by others to make water savings in the catchment.

Setting a water efficiency target, for reduction in the volume of water used, will not be appropriate in all contexts. The representative of a mining company pointed out, for example, that a mine can make use of lower quality water which is not useable for other purposes (e.g. saline water). A saving of that water would not reduce the stress on water resources for other uses such as drinking supply/domestic use or agriculture. In that case, the appropriate focus for the mining company would be water treatment after use, and recycling.

If progress is to be made in water use efficiencies, the responsibility of companies will additionally extend to their supply/value chains. Multinationals whose products involve significant quantities of embedded water are beginning to push their suppliers to adopt water saving techniques - for example, in agricultural production. The water foot-printing methodology (Hoesktra at al, 2011) applied to a multinational drinks/beverages company has provided an example of the extent to which the farm, as opposed to the factory, may represent the large part of the product water footprint, e.g. in the growing of beet sugar or cotton. The water used in agricultural supply chains, globally, is estimated as

81 Specifically to: 'provide information on the cost of your risk management actions. Where possible, please provide numerical financial descriptions (open or closed ranges or % relative to a stated or publicly available figure). If there are no costs to managing the risk, this should be made clear'.

82 In the case of multi-national companies with extensive operations in many countries, the question arises how far those figures are comprehensive.

being 80-90% of all water consumption. This underlines the importance of companies' efforts to reduce water use in the growing and processing of the inputs which go to make up their products, whether this role is assumed by the company individually and/or via trade and other industry associations. The water footprint has proved, said one donor representative, to be a useful entry point to work with corporate partners.

In tackling this substantial task, one retailer in food, clothing and home products is working, it says, through its buyers' specifications, to leverage improvements by 'first-tier' suppliers, most of all, and 'possibly second-tier suppliers too'.

The Swedish Textile Water Initiative (STWI) is an example of an industry grouping of companies working with suppliers. The STWI was launched in 2010 as a joint project between Swedish textile and leather retail companies, and the Stockholm International Water Institute (SIWI), to guide water management in the manufacturing of clothes, shoes, home textiles and accessories. The STWI has produced guidelines for sustainable water use in this sector, targeted primarily at textile and leather suppliers with wet production processes such as dyeing, printing, finishing and tanning. For STWI, it is the textile factories which are the agents of change. The aim of the initiative is to show how efficiency can be synonymous with reducing costs. Each factory looks at the business case for investments to address water management inefficiencies.

Meanwhile, Olam's support to its agricultural suppliers comes in the form of agricultural training as well as provision of inputs to farmers, including finance. As an example of the rationale for this training, the provision of fertiliser to a cotton smallholder community to increase yields and therefore incomes might, the company says, if the application of the fertiliser is untrained, pollute water resources and increase carbon emissions. Hence, the investment in farmer training is factored in by the company (Olam International – Corporate Responsibility and Sustainability Report 2014, p.10). In effect, this is a form of agricultural extension supplied by a private company as compared with a Ministry of Agriculture or other public body, although it is targeted to companies' selected farms[83].

3.6 Water re-use

As for water re-use, including water treatment and re-cycling, it can reduce the volume of 'new' water used by a business. The question arises how extensive a practice it is currently and could be in the future?

According to an international company which provides expertise and technologies to clients in a range of sectors, 'there is big scope for re-use in, at least, industrial contexts, although much less so in agriculture, as well as a lot of interest in re-use, although each case varies'. 'Watertech' is a business opportunity' (Sarni, 2011).

Anheuser-Busch InBev notes in its Global Citizenship Report 2014 (p.7): 'Repurposing water use for production is a central part of our global water strategy. After use, the water is cleaned and returned directly to the local watershed, reused in our operations or by the community, or supplied to a municipal treatment system and then returned to the watershed. At the end of 2014, nine facilities provided clean water to meet local community water needs'.

The representative of another multinational brewer noted a case where effluent from a brewery process was within the compliant standard for water quality – category (i) in the WBCSD classification in Box 2 in Section 1.4 - but the company elected to add a process to treat and clean further, for re-use and then returning the water to agriculture. 'Re-use enables us to off-set additional water used' (on off-setting, see below in Section 3.10).

One technical specialist commented that investing in re-use and recycling can actually involve more consumptive water use, for example in power plants (coal/nuclear) since internal recycling involves cooling water (instead of disposing of it) and that can entail more cooling towers and more water up the stack which evaporates. In other words, there are trade-offs, and not just trade-offs that are technical or financial, e.g. neighbours might for example not like seeing tall cooling towers, thereby raising social licence risks.

Several company representatives commented that re-use and recycling technology could be very expensive, so that, despite the increasing resilience such systems could offer to business operations, their companies were looking for cheaper ways to reduce pressure on the water resource by talking to other water users in the catchment. A

83 According to Alex et al. (2002), World Bank Financing for public extension systems grew rapidly in the 1970s, slowed in the 1980s, and, until 1988, there was little evidence of decline in public spending on agricultural extension. However, since 1988 there may have been a substantial decrease in funding for extension. Back in 2002, one possibility was for Governments to reduce funding and shift responsibility to the private sector where private firms can deliver extension or farmers can share costs and enact policies that facilitate pluralistic national agricultural extension systems. Fundamental issues in these reforms are who should fund extension services and how.

representative of a chemicals company similarly said that, while re-use was becoming more and more important in scarcity contexts, his company cautioned against re-using too often because that uses a lot of energy (i.e. the trade-off between water and energy savings). Technological solutions are expensive, and therefore often may only be available to wealthy multi-national corporations, leaving supply chains and outgrowers unable to access these solutions. This reduces the ability of less wealthy farmers, for example, to reduce water stress.

3.7 Collective/cooperative action

Most of the corporate representatives interviewed said that their companies were increasingly aware of the water risks beyond their own plants/premises and were informing themselves of catchment water management issues including assessing whether to engage in collective action.

Some company representatives interviewed during this study stated their view that engagement 'beyond the factory fence' is complicated - 'swampy' ground' as one person expressed it. Consequently, they said, there was a preference on focusing on improving water efficiencies in companies' plants and operations as this was easier to obtain internal support for, and to explain the logic of the need to improve water use. Both company representatives and others who are participating in those fora commented on the considerable time and effort required in collective action - a cost that has to be justified in business plans (against the risks of inaction).

The dilemma is that when water resources are being poorly managed in a catchment, water management at that scale 'requires collaborative approaches', or, in other words, requires adapting to a 'new paradigm' where water risks can longer be managed just internally (Sarni, 2011, p.242).

The International Water Stewardship Programme (IWaSP) - described in **Box 8** - is an example of a major donor-funded programme that supports collective action – major multi-stakeholder projects - in different countries, on the basis that 'only joint efforts can break the downward spiral' (IWaSP, undated).

Box 8. The International Water Stewardship Programme (IWaSP)

The International Water Stewardship Programme (IWaSP) focuses on five key areas:-

- Improving the cooperation between public sector, private sector and civil society;
- Strengthening public sector institutions and policies;
- Implementing scalable projects that measurably reduce water risk;
- Maximising impact by leveraging financial and technical resources;
- Promoting best practice water stewardship approaches on national, regional and international levels.

The IWaSP partnership approach works through IWaSP acting as an 'enabler', an 'advisor and honest partnership broker' and an 'implementer'. IWaSP 2015: 'Public authorities in these economies often lack the capacity to properly plan, regulate and finance water resources and infrastructure' [i.e. the public 'governance gap' referred to in Section 1.1 of the present paper].

IWaSP is currently active in seven countries - Kenya, Uganda, Tanzania, Zambia and South Africa, as well as Grenada and Saint Lucia, supporting water partnerships in each country. It is led by GIZ and funded by the German Federal Ministry for Economic Cooperation and development (BMZ) and the UK Department for International Development (DfID) who have committed Euros 6 million and Euros 21million respectively over the six year period.

Source: IWaSP, undated and 2015.

IWaSP utilises a 'five-phase process' to guide the process of 'partnership creation and execution', reproduced here in **Figure 5.** As a generic framework on partnerships, it is applied by IWaSP specifically as the 'Water Risk and Action Framework'. It is designed to 'deliver accelerated and sustainable results to benefit businesses, communities and governments'.

Figure 5: The 'Water Risk and Action Framework' of the International Water Stewardship Programme

In the context of lack of government capacity in some developing countries as referred to in Box 8 - the public governance gap - the IWaSP seeks to strengthen public sector institutions and policies, as well as 'improve cooperation between the private sector, public sector and civil society'[84]. For example, in a case in Tanzania, government resources and capacity at sub-basin level were lacking, so GIZ, as the international implementing partner for IWaSP, offered support. The intention appears to be for the initiative to act as a catalyst, with the government picking up the role of leader in the medium term', i.e. the catalytic role referred to in Section 1.1. Several other company representatives echoed this saying a key objective of multi-stakeholder fora was to motivate government.

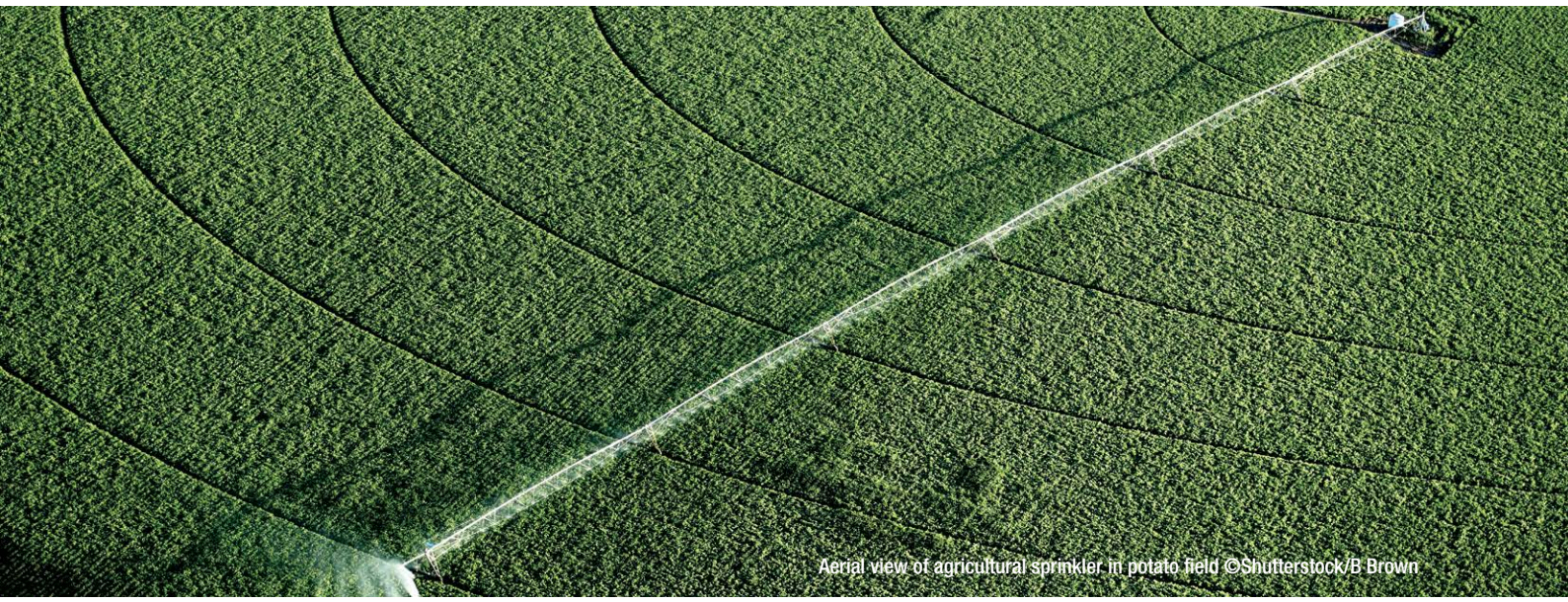
The representative of one multi-national company which participates in water user associations 'as part of finding solutions to catchment management challenges', whether itself or via a subsidiary company, emphasised that it does not act as convener or chair, and does not wish to do so. 'It is the job of local government to create and lead those associations'. Government had to be at the table and their company did not convene or chair the water user meetings. Similarly, 'companies will attract criticisms if they are too close to basin processes', said a staff member of an international consulting firm.

The IWaSP programme is monitoring results against a number of outcomes to be achieved by the end of the project in 2018 as well as intermediate outputs. Examples of the former are: 'number of people benefitting indirectly from water security' and 'number of people benefitting directly from improved water security'. IWaSP works, it says, on the assumption that 'improved water security reduces poverty and increases economic growth' (IWaSP logical framework, 2014). However, indicators of intermediate outputs are used to monitor the number of collaborations established and the scope of participation in those, to form a long causal link between actions, processes, and the ambitious target outcomes (including poverty reduction), in a now comparable way to many ambitious donor funded projects.

Another example of collective action is the Monterrey Water Fund (*Fondo de Agua Metropolitano de Monterrey* - FAMM)[85]. The Monterrey Water Fund was established as a multi-sectoral initiative (public-private-academic-civil society) in 2013 and is registered as an NGO. There are 60 actors listed as participants in FAMM according to its

84 IWaSP also states as its aim to 'create shared value' (IWaSP, undated).

85 FEMSA (Fomento Económico Mexicano), a consumer company comprised by Coca-Cola FEMSA, FEMSA Comercio, FEMSA Strategic Businesses and a strategic investment in Heineken (FEMSA is the second largest stockholder of Heineken), has played a leading role in creation of the Water Funds in Mexico and Latin America through the FEMSA Foundation (the social investment arm of FEMSA) and the partnership along with the Global Environment Facility (GEF), the Inter-American Development Bank (IDB) and The Nature Conservancy (TNC) called the Latin American Water Funds Partnership. FAMA: http://www.fondosdeagua.org/es/fondo-de-agua-metropolitano-de-monterrey). The Water Funds are defined as collective impact initiatives that create and strengthen governance structures and develop science-based solutions oriented to catalyse a systemic change in the water sector to reach water security.


Aerial view of agricultural sprinkler in potato field ©Shutterstock/B Brown

website[86]. Financial contributions to the Fund have been made primarily by private bodies, including the FEMSA Foundation, as well as contributions and coordinated investments from public entities. The first task, which lasted 2 years, was to gather information from government, universities, NGOs and companies and to create the governance structure (the structure that facilitates the members' interactions). The data collection formed the basis for communicating to elected leaders and communities the nature of the challenge. The Fund is also beginning to establish a common language 'since water means different things to different stakeholders' and a data-driven culture facilitates the engagement (source: key informant interview). The FEMSA representative noted: 'The challenge is big, but solvable through a sustained effort over time. The key is to build bridges between the stakeholders'. FAMM has currently two main projects:-

1. To protect the natural water sources through the design and implementation of a Conservation Plan and;
2. To develop a Water State Plan for 2050 (a request from the state government).

'The combination of both projects and the multi-sectoral support could potentially revolutionise the water planning process for the region and become a successful case of collective action', stated the FEMSA representative[87].

Some multi-stakeholder collaborations date back before the debate and action on stewardship. As an example, WWF explains the interaction between actors in the Kafue River basin in Zambia[88], and its evolution as a result of stewardship, in the following terms:-

> 'At Kafue, the focus of WWF's work for many years was the reaching of an agreement with the electricity company and dam operator on water releases for downstream flows. Today, WWF and its partners in Kafue are collaborating with actors from a range of sectors - beef, sugar, community fisheries, water supply - based on the more developed understanding of economic dependencies and risks that recent tools and knowledge under stewardship have provided in this basin of great importance to Zambia. While the Kafue project still involves the hydropower company and some other actors originally involved (e.g. local government), stewardship means the project is now built on different premises, with differences with regard to incentives, intent and objectives. A superficial look might suggest that Kafue has just been re-labelled, but that is not the case. Over the last decade, the thinking has moved on and the prospect for achieving positive long term outcomes is better'[89].

The efforts to bring together stakeholders in the Lake Naivasha basin in Kenya – see **Box 9** - were cited by one retailer as a good example of a multi-stakeholder initiative.

86 FAMM: http://famm.mx/

87 There is no equivalent in Spanish for 'stewardship' in English, but the 2014 Annual Report of FAMM refers to responsible management ('*manejo responsable*')(FAMM-Fondo de Agua Metropolitano de Monterrey (2014), 'Informe Anual').

88 Schelle and Pittock (2005) and WWF (2015).

89 The interest of conservation NGOs such as WWF and The Nature Conservancy (TNC) (who are members of the AWS board - AWS, 2013, p.4) in supporting water stewardship is of course to see gains in conservation of nature/freshwater biodiversity.

Box 9. Lake Naivasha

Lake Naivasha is a shallow freshwater lake lying 80 km north-west of Nairobi in Kenya's Eastern Rift Valley. The Lake is Kenya's second largest freshwater body, supporting a rich diversity of plants, animals, resident and migrant birds, as well as a range of economic activities - in particular horticulture and floriculture activities as well as small-scale agriculture for planting of staples (primarily maize, fodder and vegetables). The area exports flowers and vegetables to European markets. The flower industry is highly capital and technology intensive which means that 40 large farms control most of the export trade. Commercial fisheries were established in the 1960s (introduced black bass and tilapia, as well as the common carp). The performance of the lake fishery has fluctuated due to overfishing and water level fluctuations. Further, Naivasha is a popular destination for national and international tourists as well as for second residences for wealthy Kenyans. There are three gated golfing communities around the lake shores and several private game sanctuaries. With many thousands of migrant workers relocating to Naivasha from across Kenya to find work, the basin population has increased by 60% between 1979 and 2009.

The increase in socio-economic activity in the basin has brought a range of impacts. Water abstraction is reported to have reduced lake levels by approximately one third, increasing the proportion of shallow water. Other problems include excessive soil erosion and sedimentation, pollution and eutrophication, over-fishing and poaching, invasive and alien species and loss of riparian vegetation including papyrus which originally fringed the entire lake. Deforestation in the upper catchment is thought to contribute to a 'flashier' response to rainfall (runoff peaks/troughs with higher evaporative losses after floods and lower dry season flows).

With the support of the Naivasha Basin Water Resource User Association (LaNaWRUA), an umbrella group has been formed to facilitate communication and to coordinate activities for promotion of the sustainable management of the basin. That has included entering into a Memorandum of Understanding with the government (the Water Resources Management Authority). The aim of the group is to provide a multi-stakeholder platform for community participation in managing the basin and its resources. The report records (Hepworth et al, 2011, p.34) that 'many previously excluded stakeholders such as small-scale farmers, pastoralists, local businesses, villagers and those situated on the upper catchment have been included'. A particular concern is the lack of resources for the water resource user associations (WRUAs) and as, of yet, an apparent unwillingness or inability for the Ministry of Water and Irrigation to support the WRUAs financially. 'To be effective', the report notes, 'the WRUAs and other stakeholder groups must have legitimacy which is derived from being genuinely multi-stakeholder, being considered 'fair' and being able to deliver benefits'.

Source: Hepworth et al, 2011

The 2011 study in the Lake Naivasha basin particularly focused on two farms, one producing cut-flowers for the UK/European markets and another growing vegetables for the largest supplier of Kenyan grown vegetables to UK supermarkets. The authors of the report conclude (Hepworth et al, 2011, p.viii) that: 'both sites exhibited many features of best practice in terms of their existing water use and stewardship. The on-going pressure on water resources in the Naivasha basin, and in particular the drought of 2009, forced the sites to explore and implement progressive strategies for efficient water use and both farms support efforts to improve basin governance, including through the WRUAs'.

One issue highlighted by the report is that not all the water abstracted by the farms is covered by a valid water use permit, despite their efforts to obtain licences from the Water Resources Management Authority - which is under-resourced and facing a big backlog. Like many developing countries, Kenya is in the process of reforming its water resources management institutions towards the IWRM model. The authors note that: 'the insights around how stewardship standards interface with statutory water governance will therefore have wide relevance' (Hepworth et al, 2011, p.11). The initiative has produced an agreement on self-regulation including a cap on water use. This local agreement limiting water withdrawals was highlighted by the representative consulted as the key achievement in that case.

Key to this kind of process is, commented an international water specialist who has followed closely the development of water stewardship, the objective of 'aligning voices' to take action for improving water resources management. The application of the AWS standard in this case served to highlight and 'flag' some systemic problems in water resources management - the incapacity of the public administration to process applications for water use permits and the pollution of the lake caused indirectly by large water users because of dysfunction of the Naivasha municipal waste water treatment works. The collective engagement of the aligned voices, of businesses and NGOs, was brought to bear to influence the public authorities to take action to address the permitting problem and to refurbish the works, i.e. an example of the 'catalytic' role that water stewardship initiatives can play in improving water governance.

Other examples of collective action are as the California Water Action Collaborative (CWAC) and the Strategic Water Partners' Network in South Africa (SWPN).

CWAC was formed in 2014 as a response to on-going stress on California water supplies for communities, businesses, agriculture and nature. With a territory of 423,970 km2 and a population of 38.8 million (Rippman, 2016), California is bigger than some countries, with a very large economy. Food production accounts for an estimated 77% of water withdrawals in the state. The three focus areas of the California State Action Plan are 'reliability, restoration and resilience' with ten actions:-

1. 'Make conservation a California way of life
2. Increase regional self-reliance and integrated water management across all levels of government
3. Achieve the 'co-equal' goals for the Delta
4. Protect and restore important ecosystems
5. Manage and prepare for dry periods
6. Expand water storage capacity and improve groundwater management
7. Provide safe water for all communities
8. Increase flood protection
9. Increase operational and regulatory efficiency
10. Identify sustainable and integrated financing opportunities.'

CWAC aims to generate projects which will contribute to achievement of those policy goals. For that, it is creating a platform for collaboration among those who depend directly on healthy watersheds, including a diverse group of food and beverage companies, their suppliers, conservation groups, and others[90].

During the first 'outreach' phase in 2016, the priorities have been identifying stakeholders, exploring gaps and generating new ideas, as well as evaluating feasibility of actions and their potential impacts. In addition to existing projects, CWAC intends to 'map organisational interests'. Once participating companies and implementing partners have committed to collective action and engagement, the 'implementation' phase will begin, starting with pilot projects. The intention is that the chosen projects will align the activities of CWAC with the public policy goals set out in the California State Action Plan and strengthen them. As for process, the emphasis is on trust and transparency, with tracking of outcomes against stated objectives (Rippman, 2016).

The SWPN is a collaboration between the South African Department of Water Affairs and the 2030 Water Resources Group supported by the World Bank and the International Finance Corporation (IFC), the World Economic Forum, South African Breweries, Coca-Cola, Anglo American, Sasol, Nestlé, Eskom and the NEPAD Business Foundation[91].

The water programme of a US non-profit organisation advocating for sustainability leadership describes the process it employs in leading coalitions of private companies as 'curating', as outlined in **Box 10**. The 'curation' model as tested by this non-profit is an interesting example of design and development of the 'broker' role. The non-profit assumes the responsibility of acting as the 'honest broker'. This US non-profit is confident that its proposals for water reform are 'not captured by business agendas'. Importantly also, this approach links the c.25 corporates with the public policy process required to improve the legislative and regulatory framework for water management in a seriously water-stressed location.

The water programme at this US non-profit notes the danger of seeing water projects as 'nice-to-do' activities which are separate from business issues - 'opportunistic', rather than sustained interventions - and frequently funded by 'philanthropic dollars' instead out of core business budgets. This is further discussed in Section 5.5.

The stewardship leader for an international NGO carrying out similar facilitation roles emphasised that its role was not as consultants to business. The relationship is not between a company and its hired adviser, but a meeting of corporate and NGO, each with its own purpose and mission. 'We make it clear to companies that we have our agenda. We work hard to understand how sustainability challenges look from each company's perspective, investigating with them ways to develop more sustainable business practices, including identification of corporate-wide targets to incentivise improved water management. We aim to establish a trusted, safe space where company representatives can discuss, without feeling they are going to be verbally assaulted. Where we find company representatives are not serious and ready to engage in robust dialogue about stewardship, we tell them to go back to their colleagues and reconsider their position, before we talk more'.

90 https://wateractionhub.org/projects/view/275/

91 http://www.nepadbusinessfoundation.org/download/Closingthewatergapby2030-SWPN-SA.pdf

Box 10. Curating proposals for legislative and policy reform

The non-profit is leading 'a non-profit coalition' of c.25 companies in articulating an agenda for reform of water resources management in a state of the US. It 'curates' production and presentation of proposals for changes to legislation and regulation on subjects such as groundwater abstraction, as part of strengthening IWRM. The 'rules of the game' of this collective, as established by the non-profit, are that it leads presentation of the reform proposals to legislators and policy-makers with companies providing letters of support. It thereby ensures that the companies have a say in formulation of the proposals, without control. The companies show their awareness and concern for the water management issues in question, with the benefit of some visibility, without the reform agenda being set by them – and without them taking the risk of assuming a public profile as single/sole advocates. The non-profit leader sets –or 'curates' - the policy agenda with which the companies can choose to associate themselves, or not – the coalition is not a membership organisation and companies do sometimes drop out, depending on the decisions of their leadership. As part of their commitment, the companies that do wish to be leaders have to demonstrate to the non-profit leader, and to a wider audience, that they are 'cleaning up their act', improving their own management of water, and they are ready to support greater transparency - in this case, willingness to share data on groundwater [availability and] withdrawals.

This stewardship leader emphasised that in some cases the NGO had to be 'ready to walk away'. It applied its 'due diligence process' to identify companies that were serious about sustainability and those that were not. The aim was to avoid entering into partnerships which would not progress – where there was little or no programmatic content, as compared with promotion of the corporate brand via sponsorship, or alternatively where a company or group of companies develops a stewardship plan and asks an NGO to endorse it - effectively to 'rubber stamp' it. The NGO representative did not specifically mention cases where the relationship with corporates included funding by the company or its philanthropic foundation of joint projects including contributions to NGO salaries and other costs. In that scenario, the due diligence process could usefully be designed with a view to rebutting possible criticisms from other civil society organisations that, by accepting core funding, the NGO had in some way been 'co-opted'. If it was were so, it would be - to use a common expression - a case of the 'fundraising tail wagging the advocacy dog'. One anonymous commentator working for an NGO has expressed a view - a trenchant one - as to how partnerships between NGOs and companies can lead NGOs astray (fundraising taking priority over advocacy)[92].

A question that arises is whether private companies have, essentially, the patience necessary for multi-stakeholder processes? They see themselves as action-oriented and they like quick decisions. One commentator thought that companies might be entering into private agreements with neighbouring water users, individually or in small groups near to company plants/premises on water access and water rights without disclosing those to the authorities. Alternatively, those contractual arrangements could be with local government authorities. The downside of undisclosed agreements is the lack of reputational/brand benefit. In a multi-stakeholder forum, the dilemma is that speedy decisions are prone to be seen by other actors as corner-cutting, or, worse, 'capture'. What is dynamic, action-oriented decision-making in a business context is apt to be seen in a policy/political context as hasty without sufficient consultation. If the staff member of an international donor agency leading a multi-stakeholder initiative commented that pushing actors to engage is a 'slow grind', the inference may be that this is not the right role for representatives of companies whose leadership is pushing for quick results – for the company, and for the advocacy messages around those actions for wider brand impact. High transaction costs are, of course, costs that companies tend to minimise or avoid if possible, but for multi-stakeholder processes to work all parties need to see their benefit(s) from being involved. Dominance is always going to raise suspicion.

The aim of the collective actions will be to achieve outcomes at scale. That compares with the supply chains of individual companies that are often complex and diverse, making it difficult to approach water management issues by area or zone. A representative of a water fund talked of the need for fora where groups of farmers in a catchment are open to discuss what to grow for the best, as compared with decisions by individual farmers and farm businesses which are not enough to resolve the water problems in a catchment. It makes more sense, in hydrological terms (without prejudice in commercial terms, e.g. by switching between annual crops) for the farmers in one zone to focus on certain crop types, while the farmers in another zone grow other agricultural products – an example of a 'bigger picture' water resources management perspective, as further discussed in Section 6.2.

CDP expects companies to take account of collective action at the water risk assessment stage and record that at the place in the CDP questionnaire where companies are invited to talk about the collective actions in which they are

92 'Secret aid worker: NGOs rarely say no to corporate cash': https://www.theguardian.com/global-development-professionals-network/2015/nov/24/secret-aid-worker-ngos-rarely-say-no-to-corporate-cash

Release from the Orto-Tokoy irrigation reservoir, Kyrgyzstan © James Dalton, ITAD~Water

engaged. There may be an inherent tension between a company's desire to disclose as many examples as possible of collective actions beyond the factory fence on the one hand, as evidence of its credentials as a good steward, and a real fear on the other hand that the more collective actions it embraces, the more it may be perceived as having taken on additional water risks before those collective actions bring benefits in terms of enhanced water security. To minimise their risks, companies tend to turn to third parties, such as major donors or NGOs, to lead water stewardship initiatives. Just as private for-profit companies are not expected to realistically undertake finance of major 'hard' water infrastructure without a public funding guarantee, explicit or implicit (as discussed in Section 4.12), why would one expect a private for-profit company to undertake major funding for the 'soft' infrastructure of collective action in water management without the participation of other actors?

3.8 What motivates companies

What are the motivations of companies in engaging in water management and stewardship?

The representative of a multinational company in the food and beverages sector described the company's motivation in terms of: 'reputation, revenue and risk'. '**Reputation**', he said, is a key corporate interest at different scales, from local to global. The company wants to be 'in good stead' with its neighbours, whether they consume its products or not. The nature of water with its social and cultural characteristics means that the company needs to maintain its 'licence to operate' which is, this corporate representative said, 'emotional' – transcending social. Further, negative comment in one location around a particular company operational site, has the potential to generate a media story which spreads far beyond the immediate vicinity. This can pose a threat to the company's reputation nationally and globally. The criticism of Coca-Cola in Kerala[93], Uttar Pradesh, and Tamil Nadu in India (which the company has always said is unfounded) is the example some corporate representatives interviewed mentioned. Some interviewees specifically mentioned this incident as a trigger for action by their own company. The incidents in Kerala were reported by different media channels, but Berglund and Helander (2015) provide information based on local research findings[94]. The overall global response by The Coca Cola Company was to invest in hydrologists, consultancy support, data collection, and source water protection strategies. The Kerala situation re-orientated the business to react, respond, and re-focus on water in their business - according to The Coca Cola Company.

93 See Berglund & Helander (2015).

94 As noted above, the Coca-Cola Company has always objected to the criticisms as being unfounded. Further reading includes: Hills and Welford (2005); Burnett and Welford (2007); Karnani (2014); Kaur and Aggarwal (2012); Faheem (2009); Cedillo Torres et al. (2012); and Hwang and Stewart (2008).

The second of the trio, '**revenue**', refers to direct cost savings which may be made in production systems, through for example measures for water efficiency and reuse at plant level, or water efficiencies in the agricultural supply chain. Revenue may also be increased, indirectly, as a result of work with, for example, local communities in the catchment where the plant is located that enhance the company's 'brand position', and at the macro scale, the sustainability reputation along the supply chain.

The representative of a big food company mentioned, in the 'revenue' category, possible increases in water tariffs. Currently - several corporate representatives concurred - water charges (the cost of water licences and tariffs) are generally not a significant driver to change behaviour. Instead, one representative said, the issue is that on top of a (reasonable) water tariff, how much is a company prepared to pay to insulate itself from the risk of losing water as a critical input to company operations?

Similarly, the representative of a major beer producing company, many of whose breweries are in 'water-scarce areas' commented that: 'because water prices are so low, our business case focusses on protecting existing markets, and assets and securing our existing market'.

Another corporate representative took a rather different view. A 10% hike in the cost of water – i.e. regulatory risk - could make a production process uncompetitive. Generally, tariff increase is a slow-onset risk, compared with drought (a catastrophic risk). Clearly, different businesses operate different profit margins and would not all agree that water pricing is going to alter their practices, or is something they would welcome.

As for '**risk**', the multinational company refered to above carries out audits and assessments of the risks to its operations from a water perspective, as well as survey of the impacts of the company's water use at each plant and premises. The reports of those risk assessments are communicated upwards in the management chain to the board, as key elements in decision-making on actions which will be taken by the company to mitigate the risks – as compared with excluding or avoiding the risks altogether which is not generally realistically feasible. Those actions may be within the plant, or outside the factory fence, in the supply/value chain or the catchment, as alluded above, or extending into policy.

One specialist of corporate water strategies noted that water risk, whilst a significant concern, does not alone drive investment. It is the extent of the business value which is at risk that will determine the degree of motivation and that will depend on the combination of supply risk, regulatory risk and reputational risk, possibly leading to a risk to capital. Alongside that, the value (including brand value) of water stewardship may be an additional factor to be taken into account. The intangible value of the corporate brand may represent a 'large part of the market capitalisation of the company' (as perceived by investors).

The question arises where do water risks actually lie? Water risks have been rated high by the World Economic Forum in recent years (e.g. WEF, 2016) and companies are, as noted, investigating the materiality for their businesses, but, depending on the nature of a company's business, an event or problem which manifests itself in too much water, too little water, or an environmental incident may, on closer examination, be seen to have been caused by the company's failure to manage another type of operational risk (with implications for brand and reputation risk). For example, a failure in functioning of water-related infrastructure may be due to poor compliance with engineering standards or to a governance problem arising between divisions of the company or the company and a local partner. The actual risk may be far removed from actual water management controls. By investigating the chain of consequences, companies will be able to identify the true nature (and value) of the risk, and, as a consequence they may not label that as a 'water risk'. This in part demonstrates two things:

- it can be complicated to understand where a water risk lies, what it may impact, how it may manifest, and what the probability of the risk is. For example, the threat of pollution due to a company's operations, even in a well regulated environment, may restrict the company internally discussing the risks, and ways to deal with them. There is often very little record keeping of risks and how they were dealt with historically; what is therefore complex to understand is,
- the connectivity and use of water within a company value and supply chain, or even at a specific site where water risks are embedded in infrastructure protocols and asset management plans. In some cases water risks may be invisible. Where this may be the case, planning for a risk is unlikely, and based on probability of the risk occurring/returning. Where it can not be identified, actions to mitigate the risks are unlikely. This suggests capacity challenges for companies to understand water risks within wider risk profiles, and therefore possibly for regulators too. Where water and broader environmental risks are underestimated, capital may be allocated to higher risk activities (Cambridge Centre for Sustainable Finance, 2016).

As for the **reputational** driver, it is particularly strong for companies with public-facing brands, especially those who have experienced negative press and public comment in relation to water use in the past, whether the bad coverage was justified or not. Daniel and Sojamo (2012) found that reputational risks are more important drivers for those with global corporate brands to protect, whereas local, physical water risk seems to be an important driver for those known primarily through local brands such as food and beverage companies with a reliance on local water supplies and vulnerability to disruption. Further, a pattern seems to emerge of companies whose use of water is 'non-essential', feeling the need to adopt a defensive posture – to set up a portfolio of philanthropic activities, for example, which are designed to form a protective reputational shield on how an organisation conducts its business[95].

For other multi-national companies, the issue of reputational risk is not such a concern. 'Consumers do not see the water in a box of cereal', said one representative, while they do clearly see it in a drink/beverage. Those consumers may not understand the full use of water to produce a bottle of beverage, but you know that the bottle has water in it. Dry cereal, or even rice, does not say: 'I am full of water'. This is reflected in the concept of virtual water which refers to the 'hidden flow' of water in food or other commodities that are traded from one place to another, and between countries, often using water in drier countries to feed populations in more humid climates (Allan, 1998; Hoekstra and Chapagain, 2007). The reason for this is obvious at first - countries with higher average temperatures throughout the year and more solar radiation are able to grow multiple crops, maximising their water resources for high value crop production – ideally. When combined with allocating local water resources to industrial water use and other higher economic returns, this appears to be a wise strategy. But many of these countries have predominantly poorer agricultural economies and little industrial development - yet. In this case, they are essentially selling their water resources through food trade to much wealthier, and ironically, water rich countries.

Larger companies tend to be those that highlight their water stewardship work. One reason may simply be the resources they have available to secure insurances help them to respond and protect themselves. Smaller, junior companies, perhaps with less operational sites may not have the same insurance protection and ability to recognise and respond to possible risks. This may result in them posing a risk to the entire industry. For larger companies it also helps to reinforce their position as a larger market shareholder, or a lead player in the sector. Being a lead player, however, also brings risks from media and other, at times, unwanted attention.

As for other motivations, and views on motivations, of companies:-

- One international commentator commented on the 'feel good' factor that company employees can derive from sustainability actions which they observe the company taking – a means, noted another corporate water specialist, of recruiting, training and retaining talent.
- The representative of a European chemicals company noted that their customers were asking more questions on sustainability issues.
- One person interviewed who works with investors and financial institutions noted that, for corporates, potential downgrades of credit-worthiness by big credit-rating agencies can be an incentive to work more on water and environmental management. 'Water is coming up on the radar more than in the past. The interest of investors is in the profitability of the company in question; they care less about the impact of water problems on surrounding areas, unless they are investing in other business ventures there'. This investment specialist additionally expressed the view that: 'The incentive for many companies for entry into stewardship is more to **reassure investors** than an inherent interest in water management'.
- The representative of an international clothes and textiles company commented that, when the company's water risk analysis is taken to different departments reflecting different business functions to discuss whether and how those risks are seen and whether they are integrated into production, logistics, sales etc., the answers are different with varying degrees of take-up.
- According to Thieriot and Tan (2016), investors did not want to read tool manuals, but instead would rather collaborate with brokers to factor in water risks. Presumably this allows them to understand the nuances and negotiate the perceived risks directly. They go on to say that the quality of any risk assessment ultimately depends on 'the quality of corporate disclosure'.

The interviews conducted during this study pointed clearly to a tendency for corporates to enter into collaborations with prominent NGOs in order to benefit from the NGOs' brand. Participants at sessions in Stockholm for World

95 Food and beverage companies withdraw much less water than for example power companies, but the need to 'keep the lights on' will often override arguments that power generation is over-demanding in terms of water. Promoters of hydropower commonly argue that it is non-consumptive because the water that goes through the turbines, or is let go through the release gates of hydropower plants is available to be used/consumed downstream, but this ignores the fact that the water stored behind a dam and held for generation of hydro-electricity is not available for other use whilst it is retained. Further, the environmental impact due to water storage can significantly affect downstream biodiversity and ecosystem services.

Water Week and at other events are presented with a multiplicity of marketing documents and brands, and a market place of logos. This is further discussed in Section 6.2.

As for what motivates companies to seek certification or standardisation of their stewardship actions, the AWS process offers 'core', 'gold' and 'platinum' standards that are awarded to companies and other water users who meet the criteria at each of those levels. The 'advanced' levels of gold and platinum are evidence of good stewardship practice – they 'show that the site is achieving best practice results and demonstrating leadership within its industry and catchment' (AWS, 2014). The question arises, however, as to how far the standards are good motivators. Companies want more than just the certificates or good practice. They want to maintain access to water, and protect current and future water rights. In that context, companies will wish for their water rights to be secured and being a good water steward, said one company representative, 'makes it more likely that a company will obtain and maintain its licence to abstract'. In heavily abstracted catchments, that may be contested, in which case the company has a choice as noted in Section 2.1 as to how far it seeks to justify and defend the volumes of water it is withdrawing.

Engaging on water may therefore be more of an 'opportunity' to secure access to water in the future, rather than responding to a 'risk' of supply. Whilst this amounts to the same thing, the motivation of companies to react may be based on the semantics of the language used. As one international researcher stated, 'businesses respond to opportunities. Risks tend to be managed by a separate group of people who only see the risks they can pre-define'.

3.9 Relocation and re-orientation of investment; 'natural comparative advantage'

Companies are talking more openly – more than even two years ago - about the possible option of re-locating production or processing plants because of water problems.

As an example of water and related factors weighing on a company decision regarding the viability of its operations in certain locations, Pepsi-Co states in its disclosure to CDP in 2014: 'We have experienced situations where lack of water availability and the resulting environmental, social and financial impacts have outweighed the business benefit of keeping a manufacturing site open and we have therefore closed the plant'.

The McKinsey report (in Chapter 4) acknowledges that some 'tough decisions at the public policy level will have to be worked out in concert with producers' (McKinsey, 2009, p.104). For example, 'in many cases, it may be more efficient to 'relocate' some crops like 'grain' to areas where water is less scarce' or to 'import those crops', so as to reduce water demand within the national territory (McKinsey, 2009, p.104)[96]. The 2016 World Bank report on 'High and Dry – Climate Change, Water and the Economy' (World Bank, 2016) notes:

> 'With water in short supply, there will be changes in what is produced' and 'where it is produced' (p.13).

The modelling done as part of this World Bank study:-

> 'suggests that trade becomes distorted when countries in arid areas continue to produce water intensive goods at ever-increasing financial and social cost, contrary to their 'natural comparative advantage' (World Bank, 2016, p.14, emphasis added).

The manufacturing/productive operations of companies vary in the proximity or distance they maintain relative to their customers. The Coca-Cola Company's 2014/15 Sustainability Report, page 33, states that, as much as possible, 'we make our products in the same markets as we sell to our customers', i.e. where possible, bottling operations are located close to sales outlets, because of the weight of the merchandise and costs of transport[97].

As for major new investments, the representative of a multinational which sells beers said that: 'It is hard to open a brewery in a water-stressed catchment'.

96 Less water-use intensive crops and other products grown in water stressed locations can surely be seen to be 'appropriate products', as per Porter and Kramer, 2011.

97 Although there are direct contrasts to this, for example, Fiji Water, a natural mineral water bottled and exported globally, in particular to North America and Australasia. Presumably, the margin on the cost of producing Coca-Cola and its global brand means that it is both cost effective to sell locally, to a locally receptive market, and globally, whereas Fiji Water sells to a particular market willing to pay a premium, where costs of production are relatively low and dominated by transport costs.

Irrigation channel, dry zone, Myanmar © Matthew McCartney IWMI

Companies will need to look ahead to site their plants in places where they will not be taking water from farmers or other local people, commented a representative of an international consulting firm. 'The search for reputational benefits will not work if too much water is withdrawn'. The implications of the relative transferability or otherwise of company plants/premises were referred to by one company executive who stated: 'The less there are opportunities for us to switch to another supplier/s, the more we have to consider how to help ensure water availability for our existing source'. Clearly, flexibility in water sourcing is key, but not always possible[98].

The representative of an international clothes and textiles company noted that: 'We had a discussion at one point as to whether we should move out of places where there are severe water problems. When we considered it, we felt that there are not going to be many more places to move to which would fit our needs', he said. 'In some key sourcing locations, the company is a big enough player (e.g. employer) to shift the policy agenda of government, as well as push for suppliers to improve their water management'. A similar perspective was presented by a brewing company for key sites they had taken over from government ownership, where employment, tax recovery, and investing in site improvements and efficiencies were important factors for the sale of the sites.

3.10 Replenishment

In the search for corporate-wide targets, a number of companies are making commitments to water 'replenishment'. According to this, local projects are supported by the company which benefit communities in water volumes equivalent to the volumes used by the company in that catchment (or in other catchments). On this basis, by supporting projects which make water savings, the companies argue that their own levels of water withdrawal are validated[99]. How far such savings may, or may not, be *real* water savings is discussed in Section 4.5.

98 For example, the operations of mining and oil and gas companies typically involve long-term investments in the particular places where the metals and hydrocarbons are located.

99 Coca-Cola reported in its 2014/15 Sustainability Report (p.34) on the replenishment target it has undertaken: Goal: 'by 2020, to safely return to communities and nature an amount of water equivalent to what we use in our finished beverages and their production. Progress: Ahead of target. Between 2005 and the end of 2014, through 209 community water partnership projects in 61 countries, we balanced an estimated 94 per cent of the equivalent amount of water used in our finished beverages (based on 2014 sales volume). This totals approximately 153.6 billion litres of water replenished to communities and nature. For proper context and understanding, our water replenishment program numbers presented in this report represent global, aggregate figures, and actual volumes and replenishment rates for individual countries may vary, and sometimes are less than as cited above due to various factors'. Subsequently, in relation to Watershed Protection Projects, the April 2016 LimnoTech report prepared for the Coca-Cola Company (TCCC) (with Deloitte Consulting LLP as advisors) estimates that 115.6% of the sales volume generated by the Coca-Cola Company facilities in 2015 has been replenished through Community Water Partnership (CWP) projects. This represents, the report says, a 38,395 million litre increase over 2014 performance. Peck, writing in The Huffington Post states that 'Coke's replenishment announcement underscores the limits of corporate environmental activism' (Peck, 2015).

The paper by Rozza et al (2013) presents replenishment in terms of 'water neutrality' for restoration of a 'sustainable water balance'. 'Water neutrality' consists of 'balancing the fraction of water use that is consumptive through implementation of community and watershed projects that produce volumetric water benefits equal to or greater than the volume of consumptive use for the particular enterprise' (p. 42), i.e. 'replenishment' under another name. The authors[100] offer this approach as 'a rational basis for industry to establish an enterprise [i.e. corporate] level target for the aggregate, measureable benefits of community water partnership investments – consumptive water use' (p.49-50). Extra margin for companies is made available, according to the authors of the Rozza et al 2013 paper, in that off-setting can occur in areas *other than* the watershed and community where the use occurs.

This kind of target will be attractive to companies because it embodies a metric that is readily communicable. Complex corporate structures of multiple countries, currencies, languages, and regulations seek simple, communicable, and comparable metrics (contrasting somewhat with the 'water is local and context specific' reality). But, how does 'replenish' stand up to scrutiny?

Implicit in the replenishment concept as proposed is the proposition that a company which sets a target for replenishment and supports a given community water project can, in so doing, call that project its own - and attribute the water 'saved' to itself in the form of a sort of water credit. Where the company carries out that project with partners, it will attribute part of the water 'saving' to itself.

As to how that part is identified, the report produced by LimnoTech (LimnoTech 2016) shows how the Coca-Cola Company (TCCC) and its advisors determine the water 'saving' attributed to the company. The tables in the Appendices to the 2016 report list 'Community Water Partnerships' which the Coca-Cola Company has supported including 'Watershed Protection Projects'. As well as the partnerships led by the company itself, there are many watershed partnership projects which are led by other organisations, for example, The Nature Conservancy, WWF, the US Forest Service and the Wildlands Conservancy. The tables in the Limnotech report include a column entitled '% TCCC Contribution (2015)' stating the extent of the contribution of the Coca-Cola Company to the partnership project in question. As shown in Table A, the percentages vary substantially from project to project, reflecting different degrees of participation of the company in the listed projects. In each case, the part of the water 'saving' attributed to the company is calculated according to the percentage of total project cost funded by the company. It is, in other words, determined on a *financial* basis.

Lankford, 2013 asks how it is that a company, business or other actor, or group of actors in partnership, in a river basin which initiates a watershed project to achieve water 'savings' can consider that itself or themselves are entitled in some way to a 'water credit' - to 'bank' those water 'savings' (an equivalent water volume) to secure its/their own future use. The notion of 'banking' or 'offsetting' water use raises immediate challenges in terms of equity. As one international water specialist commented: 'Replenishment proposes that 'water goes to the highest bidder' - the highest bidder or bidders attributes to itself/themselves the biggest replenishment achievement. The concept of replenishment surely raises questions regarding capture of the water resources and water rights. What, for example, if *all* of the companies and businesses in the catchment proposed a replenishment target? How much margin in the system would there be - how much room to make water savings? And, in that case, which companies/businesses could claim that room for making savings and on what basis?

A related question is – continuing the analogy of a bidding process or auction - how the terms of the bidding process are decided and on what basis is that 'auction' legitimated? The appropriate answer to that question will be that the partnership project in question meets the standards of integrity set out by the CEO Water Mandate and WIN in the 'Guide for Managing Integrity in Water Stewardship Initiatives' discussed in Section 2.2 – the requirements of a balanced representation of interests, transparency and accountability. In a catchment or basin where there is great pressure on available water resources, there will be intense competition for saved water. There needs to be due process setting the rules and principles which decide the basis for who makes that water 'saving' and for whose benefit. Before a company and its partners attribute water 'savings' to itself/themselves, it/they should engage in due process and demonstrably show that the due process has been carried out as well as achievement of real water savings.

'Replenishment' seems to be - at least in the manner it is presently applied - the vision of a major actor or actors who, in their desire to defend their own water withdrawals, are in danger of taking insufficient account of the hydrological limits of the system and also risk ignoring equity aspects. In a heavily abstracted catchment/basin, a simple way to

100 Authorship of the Rozza et al article combines The Coca-Cola Company, The Nature Conservancy and LimnoTech consulting.

return water to local communities would be for the corporate or corporates in question to withdraw less. That could be, for example, by the company reducing or suspending the level of its water withdrawals during a dry period

As for measurement of amounts of water replenished or balanced, one water and environmental services expert pointed out that it is easier to calculate the water volumes involved in these projects in the case of water for drinking and domestic use. As for water resources for other uses, you 'cannot of course make water, but you can capture and store it to make it more available to users', i.e. capture it in the rainy season and store it for use in the dry season, or capture it so as to recharge aquifers, or reforest upper catchments for natural water capture and storage. In such cases, calculating the volumes captured is less simple. The company of this expert uses modelling for that purpose, but, because the hydrology of such interventions is complex, those models provide only best estimates. Importantly, replenishing site-based water footprints through a localised offset does not attempt to address the major water use through the supply chain where the product requires for example, agricultural feedstock to make the final product. Replenish may, therefore, be attempting to address only 5% of a company's actual water use, but this is not generally discussed in promoting the concept[101].

It is noticeable that a number of major international companies who have adopted the concept of replenishment are among the category of those corporates whose water use is non-essential. That tends to underline the impression that corporates take up replenishment as a defence of their water withdrawals where other more essential water uses are better placed to take priority - as one private sector representative put it, to mitigate criticism for non-essential uses. In circumstances where there is no pressure on water resources, no such argument is likely to be persuasive: non-essential water use supporting welcome employment and related business activity will surely be secure. At times of intense pressure or crisis in water availability, however, essential uses are likely to take priority, starting with drinking/domestic water. As a representative of a brewing company expressed it: 'If water is 'pinched'/ stressed in a catchment, beer, as a non-essential use, may be faster to suffer'.

This is not to criticise efforts to try to identify meaningful water management targets for large companies[102]. That is important - although, as one NGO leader noted, not easy - and metrics need to be well-founded in science. Target-setting 'remained a key task for leaders of corporate water stewardship'. Simple metrics were needed which 'can speak across business units and countries' to help leverage the required 'paradigm shift' in business practice. However, the chosen metrics have to work with, rather than against, the realities on the ground including the complexities of hydrology in different catchments and river basins.

Terrace farming, Nepal ©Pixabay

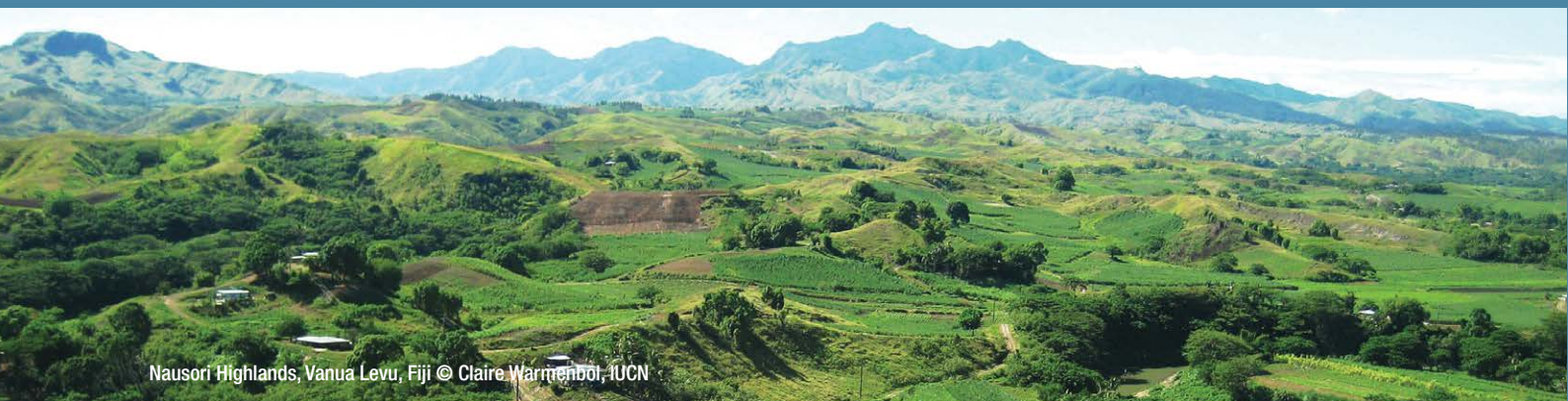
101 Dalton (2013), 'Is net positive feasible when it comes to water?' : https://www.theguardian.com/sustainable-business/net-positive-feasible-water

102 The session organised on 30th August, 2016 by the CEO Water Mandate at Stockholm World Water Week included discussion on target setting.

Summary and key points – Section 3

This Section has set out what company representatives talked about readily in the interviews conducted during this study. Water stewardship was very much on the minds of the company representatives, although the degree of engagement of their companies varies in practice, as do their motivations (with reputation being a powerful motivator for consumer-facing companies). Most companies are involved in the kind of water actions referred to in Steps 1-3 in the WBCSD, WWF and AWS guides/standard including water efficiencies in their own plants/ premises. The big step up to water stewardship from water management has, as yet, largely not occurred (with a few exceptions). Donor-funded programmes are aiming to support that shift. NGOs are also playing a prominent role, although different NGOs are adopting different approaches. Companies show differing degrees of urgency to tackle resource scarcity (including water) exacerbated by climatic conditions. Corporates are struggling to put numbers on water risks in support of the business case for action. Accounting rules and practices are not, currently, helping companies to value water assets and liabilities/risks.

- Multinational companies are encountering water problems in different locations, including in key markets. They are carrying out water risk assessments to develop a better understanding of the risks to their businesses.
- The nature of water-related impacts varies from sector to sector and company to company. Company reports vary in how they describe climate and its effects on water, as a phenomenon which is either taking effect already or has the potential to do so in the medium or long term.
- Companies are trying to work out how to put numbers on water risks to support the case for action. Protocols and tools are being developed and tested to support business water accounting, including valuing natural capital.
- Some companies are aiming to save water in their supply chains – a big task. This is particularly important in the case of agricultural supply chains because of the very large proportion of water that is consumed in agriculture.
- There is considerable industry interest in water re-use and recycling. While positive in many contexts, re-use can be expensive and heavy in energy consumption.
- Motivations of companies in engaging in efforts to improve water management include reputation, fear of loss of revenue, and risk.
- As for collective actions in catchment water management, some companies are exploring these, whilst also expressing caution. Prominent examples of initiatives supporting collective action are the projects supported by the International Water Stewardship Programme (IWaSP) with its guide to partnership creation and execution, the California Water Action Collaborative (CWAC), the Strategic Water Partners' Network in South Africa (SWPN), and some of the Water Funds work in Mexico and across Latin America.
- NGOs and donors are accumulating experience in 'brokering' water stewardship initiatives.
- Companies are beginning to talk more openly about the possible option of re-locating production of processing plants because of water problems.
- The concept of 'replenishment' seems to be - at least in the manner it is currently applied - the vision of a major actor or actors who, in their desire to defend their own water withdrawals, are in danger of taking insufficient account of the hydrological limits of the system and risk ignoring equity aspects.



Nausori Highlands, Vanua Levu, Fiji © Claire Warmenbol, IUCN

4. What companies do not talk about, or talk about less

> *'Businesses are behaving rationally today', but currently 'they are not responding to issues of climate change'.*
> (Carbon Trust, 2015, page 2)
>
> *'Water management is a system based problem, and so needs a systemic response. Business is not so good at this – it often only looks at its own system, or whatever is right in front of it at the time.'*
> (A corporate representative)
>
> *'Your storage that's buffering your risk is taking my run-off'.*
> (A hydrologist)

This section considers what company representatives did not talk about, or showed themselves less ready to discuss, during the key informant interviews on corporate water management and stewardship. Compared with the topics noted in Section 3 that the persons consulted highlighted, which aspects and issues did they tend to ignore – or even mask?

4.1 Varying market conditions

The company representatives interviewed tended to talk as if their company's engagement in water management was maintaining steady and uninterrupted progress. One representative of a major commodities company, however, commented: 'When the industry is facing a major slump in prices, margins are squeezed hard. In that climate, sustainability issues get less priority for corporate budgets'. That will translate into less money to recruit and keep sustainability staff and hire sustainability consultants. The implication of this is that practices in corporate water management will tend to evolve more slowly in hard times than in times of plenty.

That scenario can also apply to government budgets and responsibilities for water management. In relation to public-private initiatives, one promoter and analyst of partnerships in the water sector commented: 'Partnerships work in times of plenty, but under-perform in times of stress. For example, partner representatives do not come to meetings and do not fulfil their deliverables'. This is an important point. When corporates actively participate in collective action initiatives and other multi-stakeholder, or even closed stakeholder dialogues, that contribution may disappear due to wider economic concerns. In withdrawing mid-process, corporates may reduce their influence, and even credibility in these roundtable and collective action initiatives – undermining the reason for joining them in the first place.

As to what happens when tough financial times coincide with tough climatic conditions, see Section 4.19.

4.2 Variation in corporate culture

Most company representatives talked about the sustainability culture of their company as if it were consistent. Where, however, the CEO of a company changes, or a company is acquired by, or merges with, another company, a culture of good practice in relation to water management may change. One representative of an international NGO cited the case of the CEO of a company supplying inputs to the construction industry who had a personal interest in the environment and sustainability, and consequently led investment in that work. When this CEO retired, his successor from another sector quickly restrained the sustainability work, the NGO representative said, making it hard for middle managers to keep that going relative to the core activities of the business[103].

For a corporate culture to be maintained, the company's values and sense of purpose need to transcend individuals, becoming part of the 'corporate DNA'.

103 Orr (2016) recently has expressed a similar concern in his article 'Will the Real New Beer Co Please Stand Up', citing the merger between Anheuser-Busch Inbev and SABMiller as a case where past work and progress should continue and indeed accelerate on water management.

4.3 Data sharing

While many of the corporate representatives consulted during this study referred to collaborative water projects in which they were engaged, few told of the information on water they were sharing[104]. Yet, availability of data on water availability and water withdrawals is acknowledged by many commentators to be a key element of effective water resources management (e.g. Perry, 2013), and data is lacking in many river basins/countries. For commercial reasons, it is no surprise that companies which have invested in data collection ask why they should make it widely available for free – without, that is, an incentive for data sharing. Sarni argues for 'democratisation' of water data through provision by the public sector of better digital access to national and local databases on water resources (including by smart phone), replacing spread sheets with data visualisation tools, and by mobilising entrepreneurs (within and outside the water sector) to develop innovative water technology solutions and 'hubs' (Sarni, 2016).

4.4 Evaluation

A key observation from this study is that, while much promotional and marketing literature exists relating to water stewardship, there has been, to-date, a lack of independent evaluations and documented case studies. There are a lot of descriptions of projects, generally up-beat, but with little objective analysis. Corporate case studies tend to be promotional in nature - as you would expect – without, however, investigating the lessons from the activities delivered fully. Data against which to measure performance against water stewardship objectives are rarely included. In particular, as noted by one person present at the Roundtable at ODI on April 22nd, 2016, there is currently a lack of intermediate indicators of success to monitor outputs and outcomes in the short/medium term, as well as indicators to measure performance against long-term objectives.

As noted in Section 2.2, the tracking of outcomes against the stated objectives of water stewardship initiatives is one of seven integrity principles set out in the CEO Water Mandate's Guide for Managing Integrity Risks (Principle 6 in Box 5). The CEO Water Mandate's Guide to Responsible Business Engagement in Water Policy meanwhile points to the 'need for independent monitoring and evaluation, or audit by a credible, objective third-party, to track performance and outcomes' including 'adherence to the principles outlined in this Guide'. As well as forming 'a vital function in terms of transparency and accountability', such M&E processes 'help companies learn and adapt with the aid of independent reflection' (CEO Water Mandate, 2010, page 64). One international water specialist who has

Paddy fields, Khammuane Province, central Laos © Matthew McCartney, IWMI

104 A notable exception is the release by the Coca Cola Company of hydrological data to the World Resources Institute's Aqueduct project in 2011. Aqueduct, founded by General Electric, Goldman Sachs, and other large businesses, is using the data from Coca-Cola, along with other sources, to create detailed maps of water risks.

followed the emergence and evolution of water stewardship highlighted this and commented: 'Without monitoring and evaluation of stewardship experiences, there can be less learning at an important stage of evolution of the approach', when 'the momentum behind water stewardship may be maintained and increased, or, alternatively, lost'.

Company representatives were less forthcoming on the subject. Leaders of water stewardship initiatives – companies, donors and NGOs - are generally (with some exceptions) slow to commission studies. Why, is not clear. One project leader hinted that that the process of mobilisation of stakeholders in collective action is proving significantly slower than anticipated and hence mature results are still under development. Whatever the reason, in the absence of evaluations and constructive learning, observers, and public and (non-corporate) philanthropic donors may start to ask questions regarding investments and achievements. Evaluation is needed, and is a common element of development assistance projects and programmes. Lack of learning therefore may lead to lack of impact and further development of the approaches.

Examples of exceptions to the lack of detailed case studies include: the 2030 Water Resources Group commissioned, in 2014, an independent evaluation of its own activities (Dalberg, 2014[105]); the Peru Case Study Field Report relating to six water stewardship initiatives selected as case studies and reviewed in 2014 (CEO Water Mandate et al, 2014); and the Water Witness International and Olam collaboration in the case study of Upper Rivuma Basin, Tanzania (Hepworth and Farrow, 2015).

There are a number of issues and lessons which arise here. Corporate communications teams need to better understand that stewardship case studies need to speak to a broader audience, including technical and policy experts who will question internal business-orientated case studies that tend to be 'light' on data and verifiable evidence. 'Stories' help with corporate profile and with access to stakeholders, but the legitimacy of interventions is built on results that are verifiable, and demonstrate impact. Corporate communications must get better at putting their messages in context for multiple (including local) stakeholders, and not just investors, shareholders, and corporate brand value experts. Without context it is difficult to compare activities between different private and public actors, but also difficult to place the activities in relation to identified water management problems identified in the basin. Improving communications not only helps 'educate stakeholders' according to the Earth Security Group, but also helps to better explain the nature of the problem and highlight the position of the company on these problems (Earth Security Group, 2016). Corporate stewardship communications will generally be focused on promotion of reputation. Equally, some donor financed initiatives could improve how the work they support is communicated, moving it out of the public sector brand image that tends to lean towards an academic and research image, and therefore may lose its impact with companies and investors. What is the communications strategy of stewardship, and is it speaking to those that manage water in the location of any activities?

As stated by one CEO of a global giant food supply company, 'business only sets targets it can achieve'. CEO's will understandably be wary of commissioning evaluation of their companies' stewardship unless they see a business opportunity in it. The question arises, then, whether a company is prepared to – adopting Blackrock's expression – to take 'its [water management] medicine now, rather than later' in order to 'achieve a stronger competitive position in the long term versus [their] peers' (Blackrock, 2016, p.7).

4.5 Understanding the impacts of water efficiency savings – real water savings

Company representatives interviewed during this study talked about drip irrigation and other on-farm techniques for achieving water use efficiencies in agriculture without talking about the effects in the catchment.

As noted in Section 2.1, good water stewards will understand their own water use and catchment context (AWS, 2014, Step 1). The fact that a business is using less water per unit of production at a site does not say much until placed in the context of water availability and use in the catchment around that site. Similarly, whilst intervening at a field scale in agricultural supply chains may well be an attractive option for businesses in the search for rapid outcomes, the impacts, intended and unintended, of actions to improve efficiencies of water use in agriculture need to be understood.

As water use in agriculture usually dwarfs that in other sectors, as noted in Section 1.1, there is a common assumption that 'efficiency gains' in irrigation can release saved water for other users. Upgrading irrigation technologies, so the

105 The Dalberg evaluation criticised the 2030 Water Resources Group for a lack of transparency, at that time, and representativeness, although the evaluators said that there was 'potential' for the Group to remedy these failings.

argument goes, will reduce leakage and other 'losses', improving agricultural productivity and liberating water for high value industrial and domestic users. In reality, efficiency savings in irrigation rarely translate into real ('wet', as opposed to paper) water savings. This is because much of the water 'saved' was never lost in the first place. Irrigation engineers talk about 'losses' at farm or irrigation scheme level, but - as discussed in **Box 11** - they may not be considering where those losses go at a basin scale. In many cases, irrigation returns are captured by downstream users through, for example, base flow to groundwater. Groundwater users then 'recycle' the water. A technical intervention such as concrete lining of irrigation channels, may, therefore, save water at the farm and irrigation scheme level, but deprive others of their recycled water downstream. The end result is *reallocation*, not real saving.

Box 11. Impacts of on-farm irrigation techniques at catchment/basin scale

Traditional gravity irrigation schemes are generally considered to have field application efficiencies between 30 to 40 per cent. That is, only around a third of the water applied is actually used by the crop in the field.

The improved field-level outcomes of water-use efficiency techniques – drip or micro-irrigation, or changes to crop management practices, or promotion of infiltration through field bunds, or check dams and percolation tanks – can be tangible and relatively easy to demonstrate and quantify in terms of reduced application of water for irrigation and local increases in groundwater levels. The first instinct may, therefore, be to drive efficiency without considering the catchment-level system from which the water in question is being drawn.

A wider perspective, however, often reveals unintended consequences. While this efficiency calculation can be true at the field scale (although this has rarely been measured accurately over a whole season), a narrow focus on efficiency may lead to confusion, with the belief that the remaining two-thirds of water is 'lost'. The assumption is that improved farm practices can 'save' this water for other purposes, usually for more production, without any negative consequences for others. Adoption of more efficient irrigation technologies can, however, have negative impacts in terms of reducing return flows and limiting aquifer recharge (Ward and Puldido-Velazques, 2008). Aside from evaporation, the lost water from irrigated fields contributes to surface runoff and return flows that can be used further downstream, through-flow into the shallower soil profile that supports river base-flows, or percolates back down to deeper-level groundwater storage.

More efficient irrigation of cropland often means, for example, that water that would have drained back into the river basin is transferred to the atmosphere through plant transpiration and soil evaporation, leading to a net loss in water stocks in a particular ecosystem.

Supply chain water risks cannot, in other words, be addressed by looking solely at farm-level water management. A catchment or basin perspective is needed, with means of measuring whether interventions aimed at irrigation efficiencies (reducing water applications) achieve real water savings or actually increase water depletions (Ward and Puldido-Velazques, 2008), and for whom (Orr and Dalton, 2015).

Source: Lankford, 2013 and Orr and Dalton (2015)

'Real' water savings can only be achieved through reductions in the consumed fraction of water use, namely water used up for plant growth - called 'beneficial consumption' - or evaporated or transpired from wet soil, unwanted vegetation and so on - called 'non-beneficial consumption' – the terms adopted by the International Commission on Irrigation and Drainage following a consultation of its members to remedy confused utilisation of language (Perry, 2007)[106]. If the objective is to save water at a basin scale and maintain/improve crop production, then clearly non-beneficial consumption is the target, rather than the 'non-consumed' fraction that returns to the hydrological system and is used elsewhere. Context matters though. In cases where irrigation returns are damaging (in terms of volume and/or quality), then minimising the recycling of water (the non-consumed fraction) makes sense (Perry et al, 2011).

A study in Pakistan using farmer surveys and physical measurements observed that techniques to reduce water use by farmers while maintaining or increasing rice-wheat and sugar-cane cropping systems were indeed resulting in reduced water applications at the field scale, but not necessarily translating into reductions in overall water use. That was, first, because some of the water 'saved' would have percolated into the groundwater table from where it would

106 The definitions adopted by the International Commission on Irrigation and Drainage are as follows (source: Perry, 2013): 1. 'Consumed fraction' (evaporation and transpiration) comprising: 1.1. 'Beneficial consumption': Water evaporated or transpired for the intended purpose – for example evaporation from a cooling tower, transpiration from an irrigated crop. 1.2. 'Non-beneficial consumption': Water evaporated or transpired for purposes other than the intended use – for example evaporation from water surfaces, riparian vegetation, waterlogged land. 2. 'Non-consumed fraction', comprising: 2.1. 'Recoverable fraction': Water that can be captured and reused – for example, flows to drains that return to the river system and percolation from irrigated fields to aquifers; return flows from sewage systems. 2.2. 'Non-recoverable fraction': Water that is lost to further use – for example, flows to saline groundwater sinks, deep aquifers that are not economically exploitable, or flows to the sea.

Irrigation plant, Lompoc, California, USA © Shutterstock/pmphoto

later be reused by farmers through pumping. Secondly, the increased crop water productivity for medium and large scale farms rendered possible by the techniques made water use more profitable and hence gave rise to increased water demand and groundwater depletion through expansion in cropped area (Ahmad et al, 2007). The authors note that, even when technologies decrease applications of water per unit of crop output increasing irrigation water productivity, they may not decrease actual water use unless institutional arrangements are in place to limit demand (Ahmad et al, 2007).

Further, when farmers find they are using substantially less water per hectare or per crop through water-use efficiency techniques, they may choose to increase their irrigated area (where availability of land and labour permits), or add to the number of crops they grow, including switching to a more profitable and more water-demanding crop – the result being greater or higher-value agricultural production for the farmer, but not water savings.

Where an industrial plant or commercial premises use more efficient processes, that may well reduce demand for water to the plant from an 'upstream' source, plus reduce energy needs and maybe other inputs. But real savings will not amount to much if, in the first place, that 'lost' water was treated and returned to the system downstream for use by others (from the factory 'exit', as opposed to the gate). That is because in that case the saving is of the 'non-consumed' and 'recoverable' fraction. Where the returned water was unused downstream, or discharged in a polluted state with the effect of degrading the quality of water downstream, the effect would be a different story - effectively a reduction of downstream availability of good quality water.

In summary, the use of the word 'efficiency' in these water contexts can be very misleading. As Perry explains:-

> '… it is value-laden: in all other contexts, an increase in efficiency is 'good' – less fuel is consumed per kilometre travelled; less electricity is lost in transmission; less heat is lost from buildings. By contrast, in irrigation the purpose of supplying irrigation water is that it be consumed by the plant because that is a fundamental component of the growth process, and the purpose of improved irrigation technology is to maximise that proportion of water supplied that is consumed by the plant and minimise any return flows to rivers or aquifers. From the farmer's perspective, higher efficiency is good; from the basin perspective, things are not so clear' (Perry, 2011).

4.6 Water and food

Some company representatives referred to their agricultural supply chains, but the role of farmers as managers of water and other natural resources was not generally acknowledged. Based on the very large proportion of water consumed in food production (estimated at 80% of total global water use), the role of farmers is key (Allan, 2011). By comparison, the volume of water required for drinking and domestic use is tiny and, similarly, the volumes used in industry are small[107].

Allan emphasises that the potential for farmers – with the understanding and consideration of food commodity traders, as well as the processors of food products and the retail outlets selling them – to act as water stewards will be key to the development of water stewardship (Allan, personal communication).

Allan points out that the big companies (the focus of the present study) are operating, generally, in food trading, processing and retailing, rather than food production (growing of crops), except in the rare cases where companies own their own farms. Water stewardship means that the food traders, processors and retailers are asked to 'look back along their supply chains'. They need to know how farmers are managing water, and to find ways to encourage them to operate as good water stewards 'to ensure the ecological and economic sustainability of the enterprise in which they both have a stake' (Allan, personal communication). The intention is that big companies extend the scope of the perception of risk to their operations. The AWS standard[108] (Step 4.16) asks companies, as well as conducting their usual business, to understand and support changes in how business is conducted *at other stages* in the supply chain. It is a case of 'asked', rather than obliged. As a voluntary scheme, water stewardship under the AWS standard states that companies should 'contact… product suppliers located outside the site's catchment and *request* they take actions to help contribute to the desired water stewardship outcomes in their catchments' (citing Step 4.16, with emphasis added), but, as a voluntary code, it cannot require them to do this.

As noted earlier in Section 1.4, some companies have announced their intention to take responsibility for their supply chains. They are investigating how to intervene in food production and farming, for example Olam. The corporate representative of Olam interviewed during this study commented that its business is close to agriculture, 'at the farm gate' and its aim is 'to secure the sustainability of its agricultural products and food ingredients'. The company works with 'some 3.9 million' farmers in its supply chain, as well as some of its own plantations. Alongside its food processing operations, Olam is one of a small number of corporates that recognise, publicly, that farmers selling them their output need to enjoy a secure livelihood if the supply chain is to be secured.

Allan doubts, however, whether there is commercial room, currently, for companies to do this. He highlights as a major barrier to corporate water stewardship the downward pressure on food prices which is making it, he says, more and more difficult for farmers and other businesses in the food supply chain to devote time and resources to good water and land management – the economic 'externalities'.

> 'The markets where prices reflecting value-added are very closely coupled with the costs of trading, processing and retailing food, which economists would consider something approximating to a perfect market' contrast with 'the failed food production markets' of many places in many countries where the costs of inputs, including water, are not taken into account' (Allan, personal communication).

'Corporates can very easily improve water management in their food trading, processing or retailing where all the inputs are accounted for, including the full costs of water. But these corporate activities account for a very small proportion of global water – possibly as little as 1% of water in food supply chains compared with the about 90% managed by farmers' (Allan, personal communication). 'Current food pricing systems have no space to take on the costs of water stewardship. Under-pricing of food means that water stewardship cannot currently be funded by the private sector, at least not in the usual course of its business[109]. This is a key market failure resulting in over-consumption of water

107 Low and increasing in emerging and developing countries, although from a very low base compared with food-water consumption. Low and declining in most OECD economies.

108 Step 4.16 of the Alliance for Water Stewardship (AWS) standard. 'Drive reduced indirect water use throughout the site's supply chain and outsource water-related service providers: contact the site's primary product supplier and-waste related service provider located outside the site's catchments'. The term 'Supply chain' is defined in the AWS standard as follows: 'A system of organisations, people, technology, activities, information and resources involved in moving a product or service from supplier to customer. General supply chains are organised as follows: producer, processor, manufacturer, distributer, retailer and customer' (AWS, 2014, p.36).

109 The representative of a global foods and nutrition company acknowledged at a session at Stockholm World Water Week 2016 that there is a tension between the downward pressure on the prices that customers were paying to buy its products in the shops on the one hand and the putting of pressure on farmers to improve land and water managed on the other. Meanwhile, the representative of a major international brewer company told of how the company employed a team of agronomists to provide on-the-ground support to barley growers to improve their land/water practices. The representative stated that this was the incentive that those farmers needed, i.e. in effect, support in-kind - to how many farmers?

resources and degradation of water ecosystems'. For water stewardship to work, private companies and other actors need to be able to capture and internalise water costs as well as the other costs of stewardship of land and other natural resources (Allan, personal communication).

In the words of Lang (2014) and Lang and Heasman (2015), a 'commercially dysfunctional food system' currently exists. Allan agrees with this analysis and highlights the political imperative in all types of economies – OECD, emerging and developing – to prioritise the delivery of affordable food to those on low incomes. Allan concludes: 'The outcome is a – dysfunctional – system that historically delivers progressively lower and under-priced food where the need for the stewardship of water and protection of the environment is generally ignored' (Allan, personal communication). 'For the political climate to change and embrace water stewardship, Allan argues that food consumers (voters) need to give the politicians political space so that they can invest in measures that promote environmental stewardship'. Allan adds: 'The idea of water stewardship is promoted by NGOs and others, but it has not yet been adopted by society and has not yet been internalised comprehensively by the corporates in food supply chains. It is these food supply chains that dominate global water consumption (Allan, personal communication).

An alternative option is public sponsorship of stewardship, Governments – at least, those that have the means – may fund direct payment to farmers to encourage stewardship – as discussed in Section 5.1.

4.7 Land

When talking about water risks, the company representatives consulted made very few references (at least directly) to land and land-use/occupation. Yet, above costs/charges relating to water, corporate expenditure to secure and maintain rights of ownership or occupation to land (with attendant land planning laws and procedures) will commonly rate highly.

Mehta and co-authors (Mehta et al, 2012) refer to recent large-scale land acquisitions for agricultural production (including biofuels) which have attracted attention and criticism as 'land grabbing', and they highlight the water aspect which, they point out, has been largely ignored despite the interconnectedness of water and land. Mehta et al. (2012, p.193) discuss how 'water grabbing' takes place: 'The fluid properties of water interact with the 'slippery' nature of the grabbing processes: unequal power relations; fuzziness between legality and illegality and formal and informal rights; unclear administrative boundaries and jurisdictions, and fragmented negotiation processes'. They describe the associated impacts on the environment and diverse social groups.

4.8 Trade-offs

Company representatives generally like to avoid talking about trade-offs. The tendency is for corporate documents and statements to speak in terms of 'win-wins' for all. Yet, water resources governance involves management of the needs of different water users including competing uses. Arguing for win-wins becomes more difficult in catchments/basins with intense pressure on water resources where water is already heavily abstracted and water use is keenly contested. In these situations there are likely to be trade-offs. The consequence can be detriment to business interests - companies and other water users who have to face reductions in water withdrawals. In those circumstances, negotiated agreements will often be needed which embody compromise (as discussed further in Section 5.1).

Similar to 'win-wins', the notion of complete 'integration' of competing claims to water as promoted by IWRM is an example of what Molle (2008) calls an idealised or 'nirvana' concept, i.e. nice-sounding, but in practice over-ambitious[110]. The three desired aims of IWRM – to maximise economic returns, equitable allocation and environmental sustainability – are, Molle says, themselves 'frequently, if not always, antagonistic' which means that, in practice, 'trade-offs are inevitable'. Trade-offs may be hard to negotiate in situations of intense pressure on water resources, but they are 'necessary'. That reality applies equally to IWRM and stewardship.

110 Nirvana concepts, says Molle, 'embody an ideal image of what individuals and societies should strive to reach'. They employ nice-sounding, warmly persuasive, yet sanitized words that present a 'photo-negative' of the real world - visions whereby all 'contradictions would be dissolved, negative impacts internalised, and antagonisms reconciled'.

4.9 Rewards

Few company representatives talked frankly in the interviews of what recognition they would like to see for their companies' investments in improved water management. What reward for good stewardship can they expect, other than having good relations with their neighbours?

The answer from the interviews was: the 'licence to operate', but, what does that mean exactly in terms of water access? Does that mean an entitlement to its existing water allocation at any given location (preservation of the status quo), plus the possibility to withdraw more (growth and expansion), i.e. a 'licence to grow' (Sarni, 2014)?

The representative of a major company in a middle-income country was clear as to the company's expectation in terms of recognition for the financial contribution it had made, voluntarily, to improvements to the local water infrastructure. This representative talked frankly about 'a recognition in law', i.e. a legal entitlement to withdraw water, i.e. preferential positioning for water rights.

The problem was, the same representative added, that 'off-setting' was not accepted in that country, currently, and not viewed positively. The company had done some lobbying to try to influence national policy in that regard, but it was not clear what change would be forthcoming. The view was that, without a clear return on such investments, the company would be slow to take such action again in future, preferring to limit its engagement to compliance with laws/regulations and to internal water efficiencies within the factory fence (the first two types of actions in the WBCSD classification set out in Box 2 in Section 1.4).

The representative of an international company producing and selling alcohol commented that: 'The aim of stewardship is to avoid the situation where we, and other water users, have to compete for available water' - to avoid a 'struggle for who will win and who will lose out'. The key question is how long, in any given catchment/basin, will that be possible, without trade-offs? And, where trade-offs are necessary, what will be the stance of this company and other companies? In what direction will their culture(s) and the other drivers of corporate behaviours in Figure 1 in Section 1.5 lead them – towards the collective or individual interest – the collective good of shared water resources management in the catchment, or the individual interest of the company? Recognising that there can be a tension and conflict between collective and individual goals is not saying that there can be no win-wins, on the occasions when trade-offs are not necessary.

Vistula River near Warsaw, Poland © Shutterstock/Stanislaw Tokarski

In the case of philanthropic gifts by companies, can they legitimately expect to receive recognition other than good-will, i.e. reputational? Arguably not: as one international water policy specialist commented: 'Some companies think they can game it, but they need to see they will likely have to take a cut [in water withdrawals] in the medium or long term'. As seen in Section 2.1., the AWS standard envisages reductions in water withdrawals in some contexts, and the other scales in Figure 3 are in part a response to increasing competition for water, combined with expected impacts on hydrology due to climate change.

4.10 Regulation

Have companies contributed voluntarily to catchment water resources management to try to avoid more stringent regulation in the medium term? Companies still talk of regulatory 'risk', their first instinct being wariness of regulatory regimes - the concern that compliance requirements will be imposed that are unhelpful and unwanted (relating to category (i) in Box 2).

Some corporate leaders in water stewardship debates, however, recognise the need for reform of laws and regulations governing water resources management, including changes to rules relating to water abstraction/withdrawals. They are looking for predictable and (perhaps more importantly) consistent regulation, including when it comes to water.

There is, of course, no doubt that regulatory tools and enforcement are low in some countries, due to a combination of the nascent development of regulatory policies, but also a lack of human and financial resources, combined with low levels of data to monitor impacts (understanding the casual chain of freshwater pollution for example). The well documented case of the Ica Valley in Peru, and the unsustainable extraction of groundwater to grow asparagus for export is a case in point. In this example poor local regulation and lack of data, combined with the failure of standards from GLOBALG.A.P., some supermarkets' own standards, as well as the IFC's Performance Standards in relation to water resources and their use and impacts, contributed to environmental and social problems (Hepworth et al., 2010).

Non-legislative tools meanwhile include multi-stakeholder processes and platforms, governance reviews, including transparency and data collection and publication, and corporate transition management as a visioning process to better define – 'what type of business do we want to be'? Regulators may also benefit from openly disclosing water license rejections and revocations to indicate to other water users that action is being taken and needed to promote better water use, and to maintain water for other uses such as public water supply, and hopefully downstream environmental flows (as per the majority of legislation at least requires).

4.11 Competition and pre-competition

Independent consultants and commentators were quicker than company representatives to talk about the tension between companies' natural competitive tendencies and their participation in collective action. One of the ways in which groupings of companies and actors in multi-stakeholder fora can make positive changes is in modes of working and processes where companies group together to support joint agendas to improve water efficiencies in agriculture. In these examples, competing commercial interests are suspended whilst agreements are reached as to actions that need to be taken collaboratively, as compared with individualistically.

These groupings are referred to as 'pre-competitive'. Companies say they are not competing for water when participating in these pre-competitive fora, but they often reveal their keenness not to be outdone by their rivals in joining such pre-competitive spaces. One commentator pointed out that, if transparency and equity are to be preserved, collaboration of corporates in pre-competitive mode cannot include agreements or understandings to fix prices, or other actions of cartels.

4.12 Finance for water management

As mentioned in Section 1.1, part of the stated rationale for greater involvement of corporates in water management is the financial as well as other resources (human and technical) that the private sector are thought to bring to water resources management in developing countries. The question arises as to how far the companies engaging in water stewardship initiatives are generating more finance and investment for water resources management, in particular beyond the factory fence, and beyond their sole interests.

The substantial investments in water infrastructure within companies' own plants/premises have been referred to in Section 3.5. As for investments 'beyond the factory fence' – categories (iii) and (iv) in the WBCSD classification (Box 2 in Section 1.4 and Step 4 in the WWF and AWS scales), the interviews tend to confirm the conclusions of the 2015 report of the 'high-level panel on financing infrastructure for a water-secure world' (WWC/OECD, 2015). The 2015 report concludes (page ix) that the financial contribution by private companies to catchment water resource management beyond the factory fence is, and is likely to remain, small compared with the needs for major water infrastructure, both hard (dams and storage facilities) and 'soft' (institutions to manage demand).

In this 2015 WWC/OECD report, a distinction is made between water supply, sanitation and hygiene (WASH) and water resources management. The latter, which includes 'strategic' water infrastructure projects, tends not to be (directly) revenue earning, so the private sector is not the appropriate/realistic source of finance. As the authors of the report say (p.58): "…Schemes [to involve commercial/private finance] usually pivot on public backing in one form of other. While 'many governments have reduced their budgets for public infrastructure due to fiscal pressures and have pinned their hopes on private finance to fill the resulting gap…, private money can rarely fully substitute for public finance in major water infrastructure – it can only be a junior partner in most cases, and even then will need comforts of various kinds' (e.g. guarantees from government/public bodies)[111]'. In contrast to WASH, non-revenue-earning projects, including major multi-purpose and strategic water projects are 'much more problematic.' 'Many of these functions' – water storage, ecosystem preservation, flood protection – 'are public goods' (WWC/OECD, 2015, p.21). While 'water services can potentially draw on a wide range of financing modalities, from both governments and commercial sources,... financing options for water resources management and other public goods are more limited' (WWC/OECD, 2015, p.21).

An international finance specialist commented that companies 'bring expertise, more than finance'. An academic echoed this: 'I'm not sure that the private sector is doing what government used to do. It is not clear that public investment on big (built) infrastructure is going away' – i.e. there is still an important role for the public sector.

With that, the WWC/OECD panel answers the issue earlier in the report, namely as to how far governments can devolve the risks and costs of water security (p.16) to other parties, in the hope of lessening 'the cost to the public purse' (p.17). The answer, it seems, is little. Households - and businesses - may have to assume 'the first risks of water shortage by investing in their own storage and supplementary supply sources' (p.16), and farmers will commonly have to contribute to the cost of irrigation schemes, while big works will be primarily down to government agencies or other public sources of finance. It is the 'strategic purpose' of providing public goods – 'drought resistance, flood control, river basin management, maintaining 'ecological' river flows' regional development' – that justify a large element of public funding' (p.23). In developing countries it is estimated that 75% of finance for water investment is provided from public sources (Rodriguez et al, 2012).

Carter (2015) points out that an estimated US$2.5 trillion of additional annual investment will be required to achieve the sustainable development goals (SDGs), a sum that is an order of magnitude larger than the global aid budget. Rather than just stand by and hope that private finance and domestic taxation will rise to the challenge, donors want to help make that happen. In the space of a few years, the UK's Department for International Development (DFID) will have more than doubled its Private Sector Development budget, to £1.8 bn in 2015-16 (DFID Improvement Plan 2014, cited in Carter, 2015).

The representative of a leading development bank with substantial experience of the practicalities of financing water developments commented on the challenges of putting catchment scale water management initiatives into transactional form. The bank could fund 'hard or soft infrastructure', but not 'policy processes'. 'If stewardship cannot be made into a *project* on the ground, there's no way to play'. The bank had explored with a national government the possibility of setting up a fund which would aim to leverage private sector finance for flood management, alongside the bank's own development funding. The proposal was not taken up, not because of the lack of institutional capacity in the country in question, but because of the 'layers of complexity' involved - the number of actors and the complexity of the interactions between them in relation to water - a 'cross-cutting issue' with 'a mix of private individual rights and public policy concerns'. Despite the need to increase investment in measures to protect communities and businesses from flood risks, and the 'size, potentially of the market', it had proved impossible to come up with an appropriate financing structure to bring together public and private for-profit sources, in that context. There was, therefore, a question how far 'stewardship could get money flowing'.

A related question arises whether broad collective actions are good at leveraging finance, and in particular, finance for impact at scale beyond the corporate interests. Multi-stakeholder processes can be costly, with high and long term transactions costs, offering no real horizon for return, or end point for closure to corporate investors unused to these types of transactions.

111 The role of governments/public bodies (national development banks, such as the BNDES in Brazil (National Development Bank for Economic and Social Development) and international financial institutions (IFIs) like the World Bank will remain key in providing loans, and also, importantly, guarantees under the umbrella of which private finance (from commercial banks) may be invested.

4.13 Products and product innovation

During the interviews, few companies talked about product innovation, as a principle of 'shared value', and developing corporate behaviour and innovation.

Some exceptions, however, do exist. Unilever places emphasis on innovation and 'purpose-driven brands'; Marks & Spencer (M&S) develops 'new innovations' (e.g. a brand of shoes made from recycled and sustainably sourced materials)[112]; Levi's has produced 'Water<Less' jeans that 'use less water in the finishing process'; Anheuser-Busch InBev, SABMiller and Olam improved barley/agricultural production; and Nestlé, it says, 'launches new products in key markets to expand our fortified products portfolio'.

Unilever sells to shops (retail outlets) which means that it is one step removed from the end-user. The company, however, puts great emphasis on research and development for product innovation for example in 'purpose-driven' brands which, the company says, correspond to evolving customer wishes, as well as the needs of the poor, e.g. in-home water purifiers and, as noted in Section 3.5 above, easy rinse soaps that use less water (Sustainable Living Plan – Progress Report 2014)[113].

In its 2014 Sustainability Report, Danone emphasises that 'healthy foods can come only from healthy nature' so that its interest is sustainability is to promote 'health through food'. This includes products that are a 'preferential alternative to others', for example, drinks that contain less sugar (p.37).

One company consulted had switched from a previous era of involvement in coal mining and subsequently put great emphasis on its 'corporate innovation centres' to do research and development (R&D) for development of innovative products.

4.14 The constraints of short-termism, for companies and investors

The interviews pointed to the tension between medium/long term and short term investment perspectives for companies and investors.

The fund managers responsible for the investment portfolios of pension funds are, in principle, looking to secure the value of those funds in the long term, said a representative of a major institutional investor working on responsible investment. A further fund manager consulted noted, meanwhile, the short-term pressures on fund managers to show that the portfolio they are managing is accumulating value and doing so when measured in the short-term against quarterly results and reporting.

According to research by the Carbon Trust, businesses believe that change is coming, but less than half the business leaders surveyed in the 2015 Carbon Trust study considered that the drivers of change are present and operating now. The momentum will become, they believe, irresistible within a 15 year timeframe, although this appears just the other side of the business planning horizon (Carbon Trust 2015, p.16)[114]. The report of the Blackrock Investment Institute, a major US global investment management corporation[115], published in September 2016 echoes this:-

> 'Governments, investors and consumers have been slow to appreciate climate factors … Markets tend to focus on the shark closest to the boat. Risks we can see, especially visceral ones, occupy most of our attention. Contentious elections, referenda and monetary policy decisions dominate headlines. The effects of climate change are less visible and perceived by many as distant. This leads to a bias toward inaction. Bottom line: we believe climate factors have been underappreciated and under-priced' (Blackrock, 2016, p. 3).

In the words of the Carbon Trust, many businesses are simultaneously living in two realities: today, they need to drive short term performance and meet the goals of the business plan, whilst also recognising an unspecified and uncertain future,

112 This is also pointed out by Unruh et al. (2016) noting that 'Walmart and Marks & Spencer are beginning to give preferred shelf space to sustainable products, and manufacturers are taking notice'.

113 As for public opinion, referred to in Figure 1, the question arises how far the need for companies to be good water managers and stewards has penetrated, as yet, into the public consciousness.

114 As to what motivates these businesses to make changes, 'most action today tends to focus on areas where there is direct cost saving or reputational benefit for a company'.

115 According to its website, Blackrock had USD 4.89 trillion assets under management as of 30th June 2016: https://www.blackrock.com/

where they will need to address sustainability challenges and respond to stronger drivers from consumers, investors and governments. **What they do not see or understand is the pathway to move from one to the other** (Carbon Trust, 2015, p.23).

Only the largest and most capital-intensive businesses undertake a planning exercise extending beyond 10 years, and even then plans are heavily discounted when allocating resources. **This short term focus results in an underinvestment or insufficient resourcing in building options for the future** (Carbon Trust, 2015, emphasis added), even if the need for it is understood. Only two business functions commonly take a view beyond the business plan horizon: R&D teams and the board of Directors. Both of these can change the course of a company. But betting on radical innovation is by no means a certainty, and of the two it is only company Boards that are empowered to change a company's overall direction (Carbon Trust, 2015). According to Unruh et al. (2016), 75% of senior executives in investment firms agree that a company's good sustainability performance is materially important when making investment decisions. Contrast that with 60% of managers in publicly traded companies who feel sustainability performance is important to investors' decisions. Unruh et al., however, add that sustainability indices are losing their 'lustre' (as they put it), and that few companies have developed sustainability strategies.

The representative of an international oil and gas company saw it differently. His view was that the principal block to change was fund managers who ignored the sustainability achievements of companies, considering only financial metrics such as profits, rate of returns etc. Where in investment practice, currently, he asked, were the incentives for the responsible water manager? The UN Principles for Responsible Investment (PRI) Initiative was launched in 2006 to promote among investors a long-term view as well as greater account of environmental, social and governance (ESG) factors. The PRI executive coordinates a number of 'collaborative engagements' on areas where 'long-term investment performance is exposed to ESG risks' (UNEP Finance Initiative, 2014). One such collaborative engagement is on water risks in agricultural supply chains. Investors representing nearly US$6 trillion are starting to engage global, listed companies to have them better disclose and manage water risks in their agricultural supply chains (source: PRI executive). The focus is on foods, beverages, textiles and retail companies as sectors which are reliant on agricultural inputs from water-scarce regions.

In terms of corporate governance, company Boards have a fiduciary duty to act as the guardians of a company's future prosperity, taking the long view. Evidence suggests that they are not doing this - not systematically looking beyond the business planning horizon. Company boards face competing priorities and are themselves under pressure to focus on the business planning horizon (Carbon Trust, 2015, p.24) – for water, that horizon needs to be flexible, looking to five years ahead and also to over 20 years ahead. Companies are focusing on market growth and demand, but it seems not trajectory planning for water resources linked to changing urban, agricultural and industrial demand and climate change.

There are opportunities, said one corporate representative consulted, in new business models, for example social enterprises, not just new technologies. An example of an alternative company form is discussed in Section 5.5.

One academic noticed, in relation to corporate interventions in catchment-level water management, the tendency to look for quick fixes. He commented that: 'Technical solutions are vaunted as offering magic bullets: behaviour change is more difficult' – and it takes longer (the short *versus* medium/long term issue again). Such 'magic bullets' can also be used to influence weaker bureaucracies and agencies, while bringing marketing opportunities and claims for companies.

What factors make taking a long-term view harder for company directors? The representative of an international clothes and textiles company highlighted, for example, that the sector is fast-moving, subject to constantly evolving fashions, so that product development times are short. Internal systems need to be capable of dealing with issues and solving problems within very short time frames.

Other short-term pressures that arise – other than the need for companies whose members hold shares to pay dividends – include financing charges on credits/loans (the corporate finance driver in Figure 1).

Meanwhile, companies in some industries may consider *actively* resisting change in the short and medium term. The Blackrock Investment Institute refers to what it calls 'incumbent' industries and notes that: 'technological advances and cost declines in renewable power and electric grids, electric vehicles (EVs) and batteries pose a threat to … demand for fossil fuels…. Greater EV penetration could have a big impact on oil prices' (Blackrock, 2016, p.5).

Short-termism is not just something that is present in the private sector. Public policy-making can of course be short-sighted too, and changes of Ministers and governments bring changes to policy directions[116].

116 Clashing with the corporate wish for 'predictable and consistent' regulatory reform/development (Section 4.7).

4.15 Connection to IWRM

Company representatives interviewed during this study referred, in some interviews, to the SDGs, but very few to the concept of integrated water resources management (IWRM). One international water specialist commented that IWRM processes led by government and international agencies have not adequately considered private sector involvement, at least not until recently (despite the recognition of the private sector role in 'original' IWRM guiding documentation - GWP, 2000). This tends to confirm the existence of a disconnect between the efforts led by governments under Goal 6.5 of the SDGs (the implementation of IWRM plans) and the water management initiatives of private companies (with relevance to other SDGs).

Few company representatives talked about the need to strengthen the capacities of government in water management, including monitoring and enforcement - not just the capacity to fund some cherry-picked projects, but the ability to effectively apply a systemic approach to water resources. In relation to companies' role in water resources management, one corporate representative said:-

> 'Water management is a system-based problem, and so needs a systemic response. Business is not so good at this – it often only looks at its own system, or whatever is right in front of it at the time'.

The system is not, of course, owned by the private sector, although this does not stop corporates and groupings of corporates engaging with governments to push for appropriate water sector reforms as they see them.

Are the companies and other actors, e.g. NGOs, who take part in water stewardship initiatives looking to encourage the government to 'pick up and run' the activities that are created according to the catalytic vision referred to in Section 1.1 and 2.3? Or, do those companies and actors want to keep them outside government oversight? Their reasons in so doing may be that they instinctively regard the hand of government as slowing or paralysing, rather than energising. In some cases, that may be true, but is the underlying rationale for promotion of stewardship to be as a complement to efforts to implement IWRM under SDG Goal 6, or as an alternative? Is the proposition that the countries and their administrations which have incorporated IWRM institutions and tenets with national law and policy should, in extreme cases, put those aside and support stewardship initiatives driven by 'growth' demands[117]? The two types of initiative must surely be linked. As discussed in Section 2.7, they are not actually different in key respects, and private sector interests can usefully be better represented in water resources management, alongside the contribution that the private sector can bring to the IWRM process - as discussed in Section 6.2.

This brings the representation of the private sector as a key stakeholder group and economic driver into the conversation; often historically absent from the IWRM conversation and the work plans of those agencies guiding the development of IWRM. The challenge that remains, however, is to take national and locally desired development impacts (and global with the SDGs) and to translate those into business opportunities, as much as risk reduction/abatement. What are the business proxies that support IWRM initiatives (at the scale of the basin) but which also help business – beyond securing future water rights (as mentioned in Section 3.8)?

One difference between IWRM and stewardship (noted in Section 1.1) is that governments have a duty to establish and oversee the system of water resources management and as such have an obligation to promote collective action. In the case of water stewardship, meanwhile, who is driving the demand to engage and on what basis: for individual interest or collective benefit, or a combination of the two?

It may be that stewardship simply operates as the corporate stakeholder mechanism to engage in IWRM, without the 'baggage' of public sector process. Different stakeholder coalitions can then organise themselves around their interests, and mobilise as they are best suited to identify and solve water problems/invest in water opportunities. Yet, IWRM as the broader policy framework needs to ensure these coalitions can function and contribute to water resources management, and governments need to establish and oversee the appropriate regulatory environment ('Bargaining' and 'Codification' in the Perry framework in Table 1).

International donors, long-term supporters and financers of IWRM do not appear to have in place, yet, strategies to build upon IWRM by integrating business agendas for the benefits of economic growth and prosperity (the broader public good).

117 'Green' growth, or otherwise.

4.16 Policy engagement by companies

Some company representatives consulted during this study talked about their engagement in relation to water policy and the issue arises as to how they engage. This is the type of possible corporate action in water management shown in Box 2 in Section 1.4, added to the WBCSD classification as category (v). In the language of Perry's framework in Table 1, the question is: what role do companies seek to play in 'Bargaining'?

It is not a universally held view that companies should engage in water policy. On the one hand, the CEO Water Mandate's Guide for Managing Integrity in Water Stewardship Initiatives (2015) takes it as a given that companies should engage, so as to be involved in strengthening public policy (Principle 1). Similarly, 'Water stewardship via policy engagement' is seen by the CEO Water Mandate, WWF and WaterAid as one of the elements of corporate water stewardship (CEO Water Mandate, undated). On the other hand, one private sector representative consulted considered that stewardship is something that is done at site and catchment levels, so that policy engagement is not part of water stewardship, at least not 'policy engagement' above the local level. Another company representative said that corporates should certainly *not* try to assume the role of the public sector, the 'prescriptive role of local government'. Where a company was seen to be pushing a role as a leader, it would turn out to 'shoot them in the foot', i.e. where, in other words, the company sought to assume the role of government in relation to decisions on/affecting water allocation.

As for the AWS standard, it cautions against 'engagement in governance and public policy' because it 'can be potentially dangerous for sites, as they could be seen as attempting to engage in 'policy capture'. Similarly, the CEO Water Mandate, WWF and WaterAid point to 'integrity risks' facing corporate stewardship initiatives including 'regulatory and policy capture', assessed as being of 'medium' likelihood and severity whilst appearing cautiously optimistic:-

> 'Mistrust of business runs high in public opinion and in many government departments. The common perception is that companies oppose environmental and social objectives, instead pursuing short-term benefits, opaque deals, or special treatment. This paradigm is shifting: when water risk is understood in relation to GDP and trade, foreign direct investment, financial flows, sunk capital, and stranded assets, strong business cases emerge in favour of protecting and managing water resources for multiple uses and involving more diverse actors'. That said, as the public, private, and independent sectors work together to promote more sustainable water management and achieve SDG6, these integrity risks, the document says, 'demand vigilance from all parties' (CEO Water Mandate, undated, fifth page).

As Hepworth 2012 notes, vulnerability to capture is greatest in basins with weak and dysfunctional institutional arrangements, which also tend to be those in poor countries where shared risks are greatest and most is at stake in terms of human welfare and biodiversity conservation. Ironically then, the places where additional support for water management is needed most are the same places where this external support could most easily lead to unforeseen or undesirable consequences, if inappropriately designed and implemented.

This was echoed in the conclusion of an analysis in 2013/14 of five stewardship initiatives in South Africa (Sojamo, 2015) – see **Box 12.** A key conclusion of this study is that: 'Ultimately, lack of public sector capacity to fulfil its mandate, to take care of the public interest and to counter-balance corporate power was blamed to be the main reason behind the need for the [stewardship] initiatives, but continued to be the main reason complicating their execution'.

Box 12. Analysis of five stewardship initiatives active in 2013/14 in South Africa

'Some corporations engaging in the initiatives had a remarkable expertise and capacity in water resources, even a comparative advantage compared to the government and other water users, However, several informants also cite a low level of general understanding of water – especially the complexities of management and governance – by corporate representatives participating in the initiatives'. **There was, therefore, a risk of 're-inventing the (broken) wheel of past policy frameworks'.**

The differences in the power wielded by the corporations as compared with other actors (power-asymmetry) was 'found to be the driver of the stewardship agenda in the country', while, at the same time, being 'the main factor undermining the legitimacy of the initiatives'.

Meanwhile, 'pertinent issues such as licensing backlogs and the water allocation reform were not directly addressed by the initiatives, even though the corporation involved often had a direct stake in them. The topics were seen as politically too difficult for already challenging multi-stakeholder engagement'.

Source: Sojamo, 2015.

The drawbacks seen in these five stewardship initiatives should not, the author argues, lead to the conclusion that attempts at corporate water stewardship should be dismissed, because they aim to improve the status quo of water resources management and 'there is no way out of the **struggle** for power and politics over water between different actors, be they state, corporate or civil society' (Sojamo, 2015, emphasis added). Corporate water stewardship, says the author, could benefit from a more open acknowledgement at the outset of the power-asymmetries between corporations and other actors (the political-economy of river basins and water at national scales). Where those asymmetries are very pronounced, mediators and facilitators will be needed to 'help in levelling the playing field', but ultimately the capacity and position of the weaker parties – not least the public sector – to initiate and participate should be strengthened (Sojamo, 2015)[118].

As to what this '**struggle**' is about, this is further discussed in Section 5.1.

One argument for involving private companies is that it helps to bring water matters to the attention of elected representatives in a way that pushes them to take action – i.e. part of the catalytic role referred to in Section 1.1 and Section 2.3. A counter argument to this was expressed by a key informant to the South Africa study, a member of a research institute, who said that donors are spending their money in partnerships that just support the private sector's already privileged access to government (as cited in Sojamo, 2015). If so, that would be an example of donor-funded policy capture.

The Coca-Cola Company is an example of a company that talks about its engagement in water policy. It is a founding member of the 2030 Water Resources Group: 'We believe the most effective way to achieve long-term water security for communities and other business is by setting sound water policies at the national level for each country' (Coca-Cola Company - 2014/15 Sustainability Report, p.34). According to Fonseca 2015, the 2030 Water Resources Group engages in a country upon invitation of the national or state government, typically at a high level with the support, commitment and involvement from a Head of State, or Minister carrying a relevant water-related portfolio. The 2030 Water Resources group is at pains to say that it works in a country with the consent of government, that it has, in other words, the authority of 'Delegation' as per element D. of the Perry framework in Table 1[119].

Hepworth (2012) noted that the risk of the 2030 Water Resources Group's work was that the methods of analysis employed would lack transparency and that the policies emerging from the analysis would 'disenfranchise' local water users and local actors. The independent evaluation of the 2030 Water Resources Group commissioned by the Group and carried out by an international consultancy company, Dalberg Global Development Advisors in 2014 tends to bear out that concern (Dalberg Global Development Advisors, 2014) , at least at the time the evaluation was conducted.

4.17 Formalising stewardship

How are water stewardship initiatives being formalised in documentation entered into by corporates?

The authors of this Discussion Document requested to see examples of the documents that companies have entered into for formalising water stewardship initiatives, but examples were not forthcoming. There seem, however, to be two types of documents being used.

First, Memoranda of Understanding (MOUs) that record the intent of companies and other actors to discuss and define collaborative working. MOUs are generally short. They may, or may not have, binding legal force. Secondly, contracts by which the parties, including corporates, enter into legally-binding commitments. In setting out those obligations, those contracts will generally tend to be longer than MOUs.

The two forms of documentation can operate side-by-side. Out of a broad collective agreement, expressed in a MOU, specific pieces of work may be formalised in contracts. Caplan (forthcoming, 2016) writing from experience of partnering in the water sector (particularly in relation to WASH), comments that, where deliverables are very tangible and already known, a contract is the more appropriate form of working. If, however, 'deliverables' are intangible and still emerging, then a 'partnership' – more flexible form of working - is likely to be needed. Compared with a

118 One problem this raises is the challenge of the contract holder and contractee. When corporate water stewardship initiatives 'contract in' NGO or other 'support' they bring challenges in terms of developing a legitimate and objective level playing field as identified by Sojamo (2015).

119 The 2030 WRG initiatives are, it says, designed to open doors for discussion of strategic policy issues relating to water and water management, across government, e.g. through chairing by the Prime Minister's office in Tanzania or with the national development bank sitting at the table as in Bangladesh.

commercial contract, use of an MOU is a sign that an exploratory arrangement and preliminary agreement is being entered into.

The AWS standard invites water stewards to commit to a series of deliverables. The standard provides in Step 3 for a 'water stewardship plan' for the site and the catchment setting out targets and actions, with a budget. The plan should, additionally include: 'An associated list indicating who will undertake the actions (i.e. who is responsible for carrying out the work) and who will ensure that the work is completed (i.e. who is accountable for achieving the target) including actions of other actors in the catchment' (AWS, 2014, p.20).

In other words, although the AWS standard is an introduction to hydrology (a useful checklist of the different facets of water resources management in catchments for companies to consider), the standard invites corporates and actors to convert that into action. And, according to the common practice of company lawyers (whether in-house or external), one would expect the *tangible* steps of stewardship to be set out in contracts. According to this analysis, the plan for the catchment-wide management of water will be set out in a contractual statement of which actor/party will do what to help improve water management in the catchment and what resources, monetary and otherwise, each will bring to the initiative. Companies will be familiar with this. As a matter of their day-to-day business, commercial companies sign contracts and enter into transactions – do 'deals'. The contracts and joint venture agreements they habitually enter into will set out the reciprocal roles of the parties/partners.

Floating market, Asia © Shutterstock/Banana Republic Images

One can argue, therefore, that the signing of such contracts provides an indicator of water stewardship initiatives being converted into the business working of companies. Businesses thrive on tangible, nitty-gritty transactions and projects, so they will surely wish to see opportunities for those under/within the 'umbrella' of broader collective arrangements. **The question arises as to what kind of deal is stewardship, currently?** Are the collaborative water management initiatives in which companies are participating negotiating spaces or spaces for agreement? Caplan comments that most global partnerships are solid at convening a critical mass of actors, but less solid on illustrating a path to solutions (and presumably impacts) and that this relates to the challenge at the heart of working in partnership, namely finding agreement or at least some common denominator consensus across stakeholder groups (or even within them) (Caplan, forthcoming 2016).

4.18 The 'sole benefactor syndrome'

A tendency observed by this study was of corporate representatives writing sustainability reports or speaking on panels at conferences to portray a context in which the reporting company is the only corporate player, down-playing or ignoring the role of other companies in a sort of fiction of sole leadership – the sole benefactor of communities. There are some exceptions, but generally there exists a language of reporting that is corporate-centric, suggesting that other companies are not present, in sight of their operations. This presumably comes from a disinclination to attribute successes to other companies, despite risks being referred to as 'shared'. One exception is clearly where companies are working through industry federations/associations (i.e. putting aside the more common state of competition between companies in the same sector), as well as via other groupings including other types of stakeholder where the collaboration is clearly communicated. Of course, individual actions on water management also bear the risk of being negated by the upstream actions of other parties.

4.19 Water and climate - again

Private sector companies see themselves as agile, capable of taking decisions quickly where necessary. The question arises: how agile are they actually being in the face of water challenges in contexts of climate variability? Even if a given CEO or company executive does not accept that *human-induced* climate change is occurring, they can observe increasing climate variability – the occurrence of more erratic and unpredictable periods of dryness and drought and more intense precipitation events causing floods. In the face of hydrology which is changeable – oscillating water supplies, peaks and troughs of water availability - there is a need for flexibility - operational ideas for production, storage and distribution of goods (services) to fit the changing conditions.

In terms of the drivers of company behaviours set out in Figure 1 in Section 1.5, the 2015 Carbon Trust study (referred to in Section 1.5) asked 200 business leaders in the UK, US, South Africa, South-east Asia and Latin America, as well as other persons from government, academia and civil society, what they considered had been the business response to climate change and resource scarcity, including freshwater (Carbon Trust, 2015). The authors of the study conclude that 'businesses are behaving rationally today', but currently 'they are not responding to issues of climate change' (p.2) 'because 'consumers, governments and investors together do not provide sufficient incentive for businesses to take the necessary action to address climate change and resource scarcity' (p.11). According to this view, the combination of these (external) drivers shown in Figure 1 is not currently working to push for evolution of corporate behaviours.

As to relative degrees of urgency or otherwise shown by companies, the representative of a major European-based institutional investor who is head of their responsible investment and who monitors company performance commented that water matters have 'surged into view' in recent years due to on-the-ground concerns and impacts (including insurance claims arising from floods). 'Our monitoring aims to ascertain that water is captured on the risk registers of companies and that company leaders, from the Board downwards, are doing 'the necessary' to address water problems. That includes taking account of the capital and operating costs of managing water, including **'investing now, rather than delaying for 10 or 15 years when everyone is scrambling for access to the resource'. At present, 'there is a long tail of companies that are not looking ahead in this way', and 'some investors are not on top of this issue'.** They need to be 'because of the threats to water availability posed by climate change'. In countries where climate is still 'a very polarised political issue' (e.g. the U.S.) the culture of adaptation is slower to evolve' with the focus on the short-term results of companies 'unhelpful' (e.g. quarterly reporting). This representative concluded that water as a subject of responsible investment is 'work-in-progress'.

In its 2016 report, the Blackrock Investment Institute seeks to persuade investors to take more account of climate change. Companies and countries that **'take their climate change medicine now, rather than later' can, it says, 'achieve a stronger competitive position in the long term versus [their] peers'** (Blackrock, 2016, p.7).

4.20 The role of government

Last, but very much not least, the role of government, and how companies see it, is a key topic. Views of corporate representatives on government's role in relation to water management differ, some showing considerable ambivalence. This issue is discussed further in Section 5.1.

Mekong © Shutterstock/Thanyapat Wanitchanon

Summary and key points - Section 4

Company representatives interviewed during this study tended to pass over factors which limit their progress to engage in water management. Their natural inclination was to point to (technical) solutions (Section 3), but, in so doing, what they said tended to down-play the 'big picture' challenges of water resources management (Section 4). Companies start from their own perspective as an individual water user and manager, as compared with a system-wide vision of water resources management. That is expected. It is governments who are responsible for setting up and overseeing that system, but the consequence seems to be gaps in corporates' awareness and understanding of hydrology and (public) water governance. Some of the items listed in Section 4 reflect simply the nature of for-profit companies competing for sales, and brand recognition/ reputation – and resource access as well as global financial markets. Companies generally compete with their sector rivals, exceptionally engaging in 'pre-competitive fora' to try to agree on water management solutions. This study confirms the conclusion of the 2015 research by the Carbon Trust, namely that businesses are slow to respond to climate change.

- Availability of data is a key element in effective water resources management, yet data-sharing was little talked about by company representatives in the key informant interviews conducted during this study.

- There is generally a lack of independent evaluation and documented case studies of corporate water stewardship initiatives.

- Companies are promoting 'efficiency savings' in agriculture. There is a common assumption that such efficiency gains in irrigation can release saved water for other users. Upgrading irrigation technologies, so the argument goes, will reduce leakage and other 'losses', liberating water for high value industrial and domestic users whilst, at the same time, improving agricultural productivity. In reality, efficiency savings in irrigation rarely translate into real water savings. This is because much of the water 'saved' was never lost in the first place.

- Irrigation engineers talk about 'losses' at plot or scheme level, but they may not be considering where those losses go at a basin scale. In many cases, irrigation returns are captured by downstream users through, for example, base flow to groundwater. Groundwater users then 'recycle' the water. A technical intervention such as channel lining might therefore save water at scheme level, but deprive others of their recycled water downstream. The end result is reallocation, not real savings.

- The big companies (which are the focus of the present study) are operating, generally, in food trading, processing and retailing, rather than food production (growing of crops), except in the rare cases where companies own their own farms. Water stewardship means that the food traders, processors and retailers are asked to look back along their supply chains. They need to know how farmers are managing water, and to find ways to encourage them to operate as good water stewards. As well as conducting their usual business, big companies are, in other words, asked, as part of the water stewardship process, to understand and support changes in how business is conducted at other stages in the supply chain.

- Some companies have announced their intention to take responsibility for their supply chains. They are investigating how to intervene in food production and farming. In securing the sustainability of agricultural products and food ingredients, water/soil moisture is a primary concern (blue and green water). These companies recognise, publicly, that farmers selling them their output need to enjoy a secure livelihood if the supply chain is to be secure.

- The question arises how far there is, currently, commercial room for companies to do this. A major barrier to corporate water stewardship is the downward pressure on food prices which makes it difficult for farmers and other businesses in the food supply chain to devote time and resources to good water and land management. For 'water stewardship' to work, private companies and other actors need to be able to capture and internalise water costs as well as the other costs of stewardship - of land and other natural resources.

- An alternative option is public sponsorship of stewardship – the funding by governments of direct payments to farmers to encourage stewardship (as subsequently discussed in Section 5.1).

- While company representatives like to talk about 'win-win', some are ready to consider the cases where trade-offs in water allocation/access are necessary.

- In seeking to maintain their 'licence to operate', companies often do not elaborate on what that means: e.g. an entitlement to its existing water allocation at any given location (status quo), plus the possibility to withdraw more (growth)?

- In the case of philanthropic gifts by companies, can they legitimately expect to receive recognition other than good-will, i.e. reputational? Arguably not: as one international water policy specialist commented: 'Some companies think they can game it, but they need to see they will likely have to take a cut [in water withdrawals] in the medium or long term'.

- Companies are ambivalent about reform of water resources management. While sometimes saying that existing regimes are failing, they are wary of new laws/regulations making changes in compliance requirements.

- Investment on major (built) water infrastructure will continue to be an important role for the public sector. For major water infrastructure projects beyond the factory fence, companies generally bring know-how, more than finance. Private investment in such major infrastructure is usually made under the 'umbrella' of public guarantees.

- Few companies talked about product innovation as a means of addressing water challenges. Instead, companies tend to look for quick technical fixes to water problems in line with short-term pressures on business performance. A predominantly short-term focus to water resources management typically results in underinvestment or insufficient resourcing in building options for the future.

- There seems to be, currently, a substantial disconnect between the efforts led by governments under Goal 6.5 of the SDGs (implementation of IWRM) and the water management and stewardship initiatives of private companies.

- The CEO Water Mandate has set out guidance for responsible engagement of companies on public policy. Analysis of five stewardship initiatives in South Africa pointed to 'power asymmetries' between corporates and other actors in the 'struggle for power and politics over water'. The author of that study concludes that: 'mediators and facilitators will be needed to 'help in levelling the playing field', but ultimately the capacity and position of the weaker parties, not least the public sector, to initiate and participate should be strengthened'.

- While private companies see themselves as agile, it is not clear how agile – how ready to innovate and adapt – they actually are in the face of water challenges in contexts of climate variability. In its 2016 report, the Blackrock Investment Institute seeks to persuade investors to take more account of climate change. Companies and countries that 'take their climate change medicine now, rather than later' can, it says, 'achieve a stronger competitive position in the long term versus [their] peers'.

5. Roles and behaviours in water resources management

> The water situation is *'reaching a tipping point which is a chronic shift from overall surplus to overall deficit'*.
> (The Environment Agency of England and Wales)
>
> 'Water resources allocation is *'a dynamic policy area"*.
> (OECD, 2015)
>
> *'Investors are interested in activities which enhance the resilience of the business, not peripheral works of charity'.*
> (An international specialist on responsible investment)

This section looks at the bigger picture of water resources management - the need for policy and regulatory review and reform in many contexts - and considers the roles of governments alongside private companies, the contribution of NGOs and donors, and the perspectives of investors in relation to water stewardship. An analytical framework for differentiating corporate 'water behaviours' is proposed.

5.1 What is the 'struggle'

What is the 'struggle for power and politics over water between different actors' to which Sojamo (Sojamo, 2015) refers, as cited in Section 4.16?

The answer is the competition for access to water in contexts of increasing water demand (e.g. due to demographic pressures) and climate variability).

As noted in Section 1.1, governments are responsible for setting and overseeing the legislative and policy frameworks within which national systems of water resources management function, including the principles and procedures which determine how water resources are allocated. 'Water stewardship', the representative of a public body said, can contribute to the public good of improved water management, but stewardship is not enough. A system for oversight and control is required'. The water allocation and abstraction regime is the core of that system for management of different, and often competing, water uses. It follows that governments need to tackle the challenge of reviewing and reforming their water abstraction regimes so as to establish systems of governance of effective water allocation capable of operating in contexts of growing water demand and climate variability.

Some company representatives consulted recognised this, in principle, although, as noted in Section 4.10, they tend to be wary of how governments will discharge this responsibility in practice.

The OECD has carried out a survey of water resources allocation regimes from 27 OECD and other countries, namely: Brazil, South Africa, Colombia, Costa Rica, and Peru, i.e. middle-income countries, as well as one river basin in China (the Yellow River).

The survey confirmed this is a **'dynamic policy area'**, with a number of countries either currently reforming allocation arrangements or recently having done so (OECD, 2015, p.61). Seventy-five per cent of countries indicated that their allocation regimes had been recently reformed, while on-going reforms were flagged by a majority (62%) of countries. Drivers of reform were 'environmental improvement or protection' (most frequently cited), followed by 'economic development' for recent reforms (in the past 10 years) and 'concerns about equity in access to water' for on-going reforms (OECD, 2015, p.62). In other words, the same objectives as are embodied in the AWS and EWS definition of water stewardship and the GWP definition of IWRM (as compared in Section 2.7).

In most locations in the OECD, water management regimes are under pressure due to increased demand, uncertainty about climate change and other factors (e.g. declining water quality). In most of those countries, the responsibility

for water allocation is shared among several institutions, at various levels of government (national, state/provincial/regional, basin, and local). In a majority of countries (74%), a mapping exercise has been undertaken to identify areas where surface and ground water scarcity is becoming a problem (OECD, 2015).

As one example, in England, the regulator - the Environment Agency (EA) has made a sustained effort to communicate to water users the pressure of demands on water resources. The EA is progressively applying its scheme for 'Restoring Sustainable Abstractions' (RSA)[120]. The context is that the water in one-third of catchments in England is already fully licensed which means that there can be no new grants of licences except in the case of change to existing licences. As for the future status, by 2050 - based on the best available information on the impacts of future climate change and other factors on water resources in England (taking into account the uncertainties in forecasting those) – the EA estimates that in two-thirds of catchments in England (between Q70 down to dry season flows at Q30) demand in periods of lower flow is likely to be greater than supply[121]. The water situation is, the EA says, 'reaching a tipping point which is a chronic shift from overall surplus to overall deficit'. The prospect of constraints on available water resources is being communicated, as a wake-up call, based on science, not alarmism.

Fly fishing in a spring fed creek in Idaho ©Shutterstock/Megan Carley

The representative of the EA consulted said that it encounters different reactions by licence holders (agricultural; commercial/industrial[122]): some (about 50%) are ready to discuss to reach an agreement, voluntarily, on change to licence conditions[123], including reduced abstraction, 'based on altruism and care for the environment'. The latter would seem to be in line with 'looking after an asset on behalf of others', the essence of stewardship as proposed by Morgan and Orr (2015) – an example of water users whose values and culture incline them to collective management of water resources in a catchment.

Other water users (the other c.50%) adopt a more individualistic attitude and decide not to negotiate with the EA, following their individual interests - in which case the EA can and does resort (not, it says, its preferred route) to the option of using its legal powers to impose a change[124] (with compensation, except in cases of 'serious' damage to the environment[125]).

120 In England & Wales (in 'The case for change' paper – Figure 2.5 on page 17), there are Restoring Sustainable Abstraction (RSA) schemes across the map, though with a concentration in the Midlands and Anglian region as well as a couple of river basins in Devon (south Devon and north Devon/Somerset) which are heavily abstracted. (EA, 2013 and EA, undated).

121 The EA expresses the hope that this climate forecast is an objective and balanced assessment of all the evidence.

122 The size of the businesses in question was not mentioned – i.e. which of the categories of 'private sector' in Box 1 in Section 1.3.

123 The voluntary scheme under Section 61 Water Resources Act 1991.

124 Under Section 52 of Water Resources Act 1991.

125 Under the most recent water law in 2013.

In other words, there are differences of attitude including different business/company culture and values and that depends on the extent of interest and concern of any given company or other water user in what is happening beyond its own premises. A water user who prioritises his/her individual rather than collective interest may be tempted to 'wait-and-see' who else in the same catchment will volunteer a change to licence conditions, thereby increasing the availability of water in the system for his/her own benefit. One argument to support stewardship initiatives is that it adds 'power' (economic) to the call for improved water management, regulation and investment[126].

The English example illustrates the transition which is being undertaken from a system which is no longer fit-for-purpose to a reformed system. The EA emphasises that water users have to be informed of the rationale for reform and consulted as to the mode of implementation of that reform. Informing water users that their water allocation needs to be curtailed before the situation has reached crisis point is inherently difficult. For example, 'agricultural interests may seek to put up a wall of resistance', commented one representative of a public international body. 'The case has to be made on the basis of a solid evidence base'. To be successful, therefore, governments have to provide sufficient resources for water authorities to assemble the necessary data on available water resources, as well as to model future needs and pressures.

As for the definition of local water rights within a national framework, in France, for example, the system of '*Organismes Uniques de Gestion Collectiv*e' (OUGC) – collective local management organisations - (FNE- *France Nature Environnement*, undated) has been introduced, initiated by legislation and regulations in 2006 and 2008 respectively[127], to promote the formation of groups of users to decide on how they wish to allocate irrigation water between them (i.e. water for agriculture), setting local rules, which have to be endorsed by the government as being in line with a key set of common principles for all catchments in the country (e.g. avoidance of domination by one water user or group of water users). The rules must set out what volumes of water withdrawals will be made on an annual basis, according to a management plan approved yearly by the administration applying to a hydrological or hydrogeological area (as opposed to an administrative area), with one OUGC only permitted per area. The management plans have to take account of minimum flows in rivers and avoid the need for emergency drought measures in at least 8 years out of 10 on average. Once the local rules are collectively agreed among irrigators and approved, individual water claims can no longer be validly made. The creation of OUGCs is not obligatory, but it is encouraged. The government leaves it up to local water users (once sanctioned as a properly constituted grouping) to negotiate their rules between themselves, as long as those comply with the common principles. The framework is set up by the central water authority, but the basis on which water is allocated is 'constructed' by the local process (in the mode described in Molle, 2004). In other words, the OUGCs are designed to be 'bottom-up', like water stewardship, although within a coherent national system (IWRM)[128].

One water specialist referred to the situation in California where he saw that physical conditions – significant shortfalls in water supply in the drought – had revealed 'structural issues that needed urgently addressing', including the regulatory regime and public policy, necessitating a 're-think of water law'. The representative of an international consulting firm commented that no regime would be well-advised to establish senior water rights as had historically been done in California. On regulation, it was key, she said, to avoid the situation where laws are complex and patchy and difficult to reform. Another water specialist noted that there is little or no incentive for holders of senior water rights, which are protected in law, to adopt water use efficiency measures. As one agricultural specialist said: 'They can waste as much water as they like' - until, that is, they are overtaken by a storm of social and political objection to their privileged status[129].

A key lesson from these experiences in Europe and the OECD is that allocation and abstraction systems need to be robust to respond to changing conditions (OECD, 2015). It is the public authorities that are taking the lead while private companies, as water users, participate in the process of drawing up catchment management plans, alongside other users (e.g. municipal). 'Catchment' here refers to land as well as water management planning. The aim is that the collective agreements achieve mutual benefit. They may be supplemented by direct payments to farmers for their management of ecosystems (wetlands, upper catchments).

126 This example above suggests that, whilst this may be the case, the 'power' of the private sector adopting a 'wait-and-see' strategy may slow reform processes, increase public sector costs, and therefore counteract the positive steps taken by others to re-negotiate water licences.

127 By the 2006 water law : La Loi sur l'Eau et les Milieux Aquatiques (LEMA). The law met considerable resistance from farmers' group which meant that the creation of OUGCs was delayed until 2012 and after (FNE, undated).

128 The OUGCs will presumably need to link to the local water committees, (the comités locaux de l'eau or 'CLE') under the French river basin management system (IWRM) - equivalent to the 'catchment partnerships' in England (CaBa website).

129 It is interesting to note that the major collective action initiatives referred to in Section 3.7, in Mexico, Kenya, South Africa, Zambia, and California all face hydrological challenges (being dry countries, or combined with increasing competition for water resources), but it is California that faces some of the most challenging governance challenges with respect to senior water rights.

An example of a system of direct payments is the 'country stewardship' scheme in England[130] under the European Common Agricultural Policy-CAP (DEFRA, 2014). This is a voluntary, although incentivised scheme. Farmers are not obliged to participate, but, if they do, they receive direct payments (the rates of payment are based on income foregone in carrying out the agro-environmental actions in question).

In contrast, governments in low-income countries will rarely have the resources to do that – without, that is, external support from donors.

Looking back to the discussion in Section 4.9, as to how far the offer of rewards under the direct payments system in England is taking effect to influence behaviours, the government reviewed the countryside stewardship scheme in 2008 and reported that farmers representing 51% of agricultural land in England were participating. The evaluation report noted, in relation to the more demanding standard of stewardship (the 'higher level strand'): 'It is hoped that, as during periods of high prices in the past, agri-environment schemes will remain popular – applicants to [the Higher Level Strand – HLS] tend **not to be profit maximisers**' (DEFRA, 2008, p.18 – emphasis added)[131]. This type of profit-maximising culture corresponds to the lower left-hand quadrant in the classification of corporate behaviours in Figure 4 in Section 2.9, 'Own Use'. In other words, the differing values - business cultures - of different farmers was noted to be a factor in evolution or otherwise of the practice. Some place stewardship objectives above profit making, others do not.

A key distinction is between mandatory and voluntary controls. Whereas agencies of government have responsibilities (i.e. legal obligations set out in their constitutions/missions) for the security and rights of their citizens, private sector companies have no *formal* responsibility to ensure that food commodity prices take water and other stewardship costs into account, or indeed that farmers have viable businesses and livelihoods.

As for the relation between land and water planning in England, practice varies. Some applicants for planning permission for development of land contact the water regulator before submitting their (land) planning application and the regulator can provide a letter in principle saying that water is available (if that is the case). Some other applicants obtain the (land) planning permission and then come to the regulator for a water abstraction licence with some making the mistake of just assuming that water will be available and a licence will be forthcoming.

In developing countries, especially low-income countries, the licence system may be an example of the public 'governance gap', for lack of resources and capacity (amongst other factors). That means that the competition for access to water resources in contexts of increasing demand and climate variability may take place without effective controls – a 'struggle' (recalling the quote of Sojamo, 2015) that is unregulated, or inadequately regulated. In other words, what could and should be a 'dynamic policy area' is a 'Bargaining' and 'Codification' gap (in the language of Perry's framework). In those contexts, review and reform of water priorities and allocation will only be effective where there is international donor support to strengthening capacity.

5.2 Roles of NGOs and donors

The role of NGOs and donors as brokers of water stewardship is important, not least to help support strengthening of government capacity in developing countries. A test of whether a water stewardship initiative is helpful or not, one interviewee said, was whether it was supporting the capacity-building of existing management structures or creating new ones in parallel - 'by-passing', for example, river basin organisations established under IWRM. The same could be said for initiatives that use high level government agreement to initiative processes that are exclusive or run counter-intuitively to wider water management concerns.

The creation of water funds was, he thought, potentially counter-productive for this reason, especially when the companies and other water users sitting on the committees/boards of the funds take it upon themselves to make

130 The countryside stewardship scheme 'will help: • Wildlife and nature: by restoring habitats, protecting hedges, providing food and nesting resources for birds, insects and other animals, and creating farmed areas for rare flowering plants. • Pollinators: by providing pollen and nectar sources and nesting places. Farmers will be able to provide the right resources for pollinators where they are most needed. • Forestry: by funding the planting of new trees and supporting the management of woodlands. • Water/flooding – making water cleaner and reducing risk of flooding by supporting changes to farming practice (such as crop management), improving farm infrastructure and creating woodland Where possible, the scheme will offer the best opportunities to achieve biodiversity, water quality and flood management benefits (DEFRA, 2014, p.18, emphasis added).

131 Meanwhile, the report adds: 'It is possible to join Entry-level strand [the less demanding standard] without compromising production – some options may even enhance efficiency' (DEFRA, 2008, p.18.).

decisions which affect water allocation downstream[132]. In that case, a question arises as to the extent of inclusion of the range of water users including small farmers and other businesses. In looking at the AWS Founding Partners who are, according to the AWS website 'committed to water stewardship', it is not clear how many of them have committed to apply the standard, and importantly, as Founding Partners, committed to seek accreditation.

Another person consulted commented on 'an NGO community that is fragmented', with 'little alignment among themselves'. The involvement of private companies in corporate water stewardship presents to NGOs a substantial market in corporate funds for which they are competing. Reluctance or slowness by NGOs and civil society to collaborate surely runs counter to the aims of collective and cooperative action that is central to water stewardship. 'Ownership' of different approaches was understood and generally felt to be counter-productive, but also similar to how some large corporate stewardship activities are implemented.

Young women at a water point in Ethiopia © Eva Ludi, ODI

5.3 Market allocation mechanisms

In reforms to water resources management, market mechanisms - transferable water rights and water markets - are increasingly being proposed as the means of allocating water resources. This is the preference of the authors of the McKinsey report referred to in Section 3.4. They assert that: 'there is ample evidence from across the world - from Mexico and Chile to Australia and Spain[133] – that countries with different levels of development and institutional capacity can, when pressed by fiscal or resource constraint, design market mechanisms, that achieve a more effective management of water resources' (McKinsey at al 2009, p.120). Alongside removing subsidies and adjusting pricing to incentivise 'more prudent use of water' (McKinsey at al. 2009, p.120), those mechanisms include 'instituting water-trading' and establishing 'water markets for market-based water allocation' (McKinsey at al. 2009, p.121). The examples given are the Murray Darling basin in Australia[134], Chile, Mexico and Spain.

132 It is not fully clear if the actual legal mandate to make water allocation decisions sites always sits within these mechanisms and fund structures. Water management authorities often do not hold the legal mandate to make water allocation decisions, often in the absence of any form of formal water allocation plan.

133 NB: these are high or middle-income countries with substantial institutional and regulatory capacity.

134 The authors of the McKinsey report state on page 121: 'The staged development of Australia's water sector reform shows an example of a path forward. The establishment of water rights and trading mechanisms for the Murray Darling Basin created the price signals needed to incentivize major shifts to high-value crops. This market improved agricultural productivity in Australia by 36% cent from 2000 to 2005, protected and created industries, and developed a large financial water market (worth US$1.7 billion in 2007-08).

Chile is a prominent example, internationally, of a country whose water rights system has promoted water trading. Three decades have passed since its introduction by the Pinochet administration in the 1981 water code, allowing time for the implications of the reforms to be assessed and re-assessed. The assessments of its impacts have reinforced the need to question the equity outcomes of registration and trading of water rights in Chile (Romano and Leporati, 2002; Bauer, 2004 and Budds, 2010). The Romano and Leporati study examined the official water market in Limarí Province, Chile, and found that the distribution of water rights in the case study area became more inequitable as trading progressed - peasant households held a lower share of water rights on a per capita and aggregate basis and tended to rely more on their original/customary rights rather than participation in the market (Romano and Leporati, 2002)[135].

As for the Murray-Darling case, opinions differ on whether the lesson is that water trading is working well, or whether in times of strain (severe water scarcity) the trading system tends to outprice anything but the highest economic users, or collapse. If the option is to increase incomes, or to shift crops to higher value products, questions arise, such as why farmers are not already growing these crops, or using water in a certain way. It may be that the intention is there, but the market, or market access is not. What may be good for the farmer may not be good for the environment downstream, and vice-versa. In the review of water allocation reforms in South Africa, Movik (2009) notes the tensions between the 'economic productivity perspective', tending to allocate water to the most productive uses in economic terms (an IWRM pillar), and a 'livelihoods perspective' that emphasises the need to spread water resources more evenly and focus on water's role as a means to sustain the livelihoods of poorer people in rural areas.

The AWS is a credible, thorough tool. Given the time and resources that have gone into the development of the AWS framework, and the developing knowledge on its use, there is an opportunity to use it further. One possibility would be to look at how it could be used with the requisite modifications, to develop, implement, and verify the delivery of benefits/outputs from Water Funds and schemes for payment for environmental services. Many of these are, at present, not monitored with results not verified. As new mechanisms for water resource management, more time is arguably needed to improve their design and gain acceptance with stakeholders. This should be important for donors to recognise, given that some have financed the development of the AWS, and are being approached to invest in Water Funds. Furthermore, many corporates and municipalities/utilities are supporting or considering investment in water funds.

Hernández-Mora and Del Moral have studied the development of markets for water reallocation in Spain. The reforms[136] were intended to facilitate faster and more flexible contracting and decision-making processes that would lead to greater efficiencies. The consequences are, however, **reduced transparency and accountability** in how public hydraulic infrastructure is planned, financed and built (Hernández-Mora and Del Moral, 2015, p.153). In the authors' words:-

> '… using economic instruments for water resources management serves to remove significant management decisions from the political arena, allowing for the presentation of conflictive and contested allocation decisions as supposedly technically and economically sound and thus not subject to political debate. Administrative and political decisions are substituted by market instruments facilitated and enhanced by a constructed institutional framework that changes the rules of the game in favour of the most powerful players'.

The question arises as to what, in fact, is the ultimate aim of proposals for market allocation mechanisms: is it **stronger government, or alternatively smaller government**? The instinct of some leaders of some private companies may be that the hand of government is, as a general rule, paralysing rather than activating. A senior representative of an

135 The more extensive literature on efficiency gains from trading under the Chilean regime dating from the 1990s was not a focus of this review due to time constraints and limited transferability of lessons from Chile's extreme version of formalised/ private water rights. Romano and Leporati's study, however, provides a useful summary of this literature. Recent, more qualitative assessments have reinforced the need to question the equity outcomes of formalisation and trading of water rights in Chile. See for example Bauer, 2004; and Budds, 2010.

136 Water resources management in Spain has evolved since 1996 with the establishment of public water companies under business law ('derecho mercantil'), as compared with administrative law ('derecho administrativo'). The companies were created with public missions to develop hydraulic infrastructure (previously a mission of the public River Basin Agencies), but their constitutions and the framing laws (the legislation governing this form of company) mean there is less opportunity for public supervision and scrutiny than in the case of agencies governed by administrative law. For example, there is no representation of local and provincial government on the boards of these water management companies, only national, with water users also holding no seats on the board, without necessarily also having shares in the company equity. The case in favour of adoption of this commercial company form in relation to water management was argued on the basis, principally, of reducing the public deficit in Spain at a time that convergence with EU-mandated deficit goals for entry into the Euro was a national policy priority. The process of reform has been, the authors says, heavily influenced by the pressures of powerful regional elites—based on the competitive advantage of Mediterranean intensive agriculture and a strong tourism industry and their significance in Spain's role within the larger European and global economic system - so that the regulatory outcomes are coherent with their interests. The experience with the Tajo-Segura water sales shows that in cases of unequal access to power and information water markets serve to heighten the lack of transparency and accountability and intensify unequal power relations (Hernández-Mora and Del Moral, 2015).

international NGO echoed this view, saying: 'We often don't see governments moving at a pace fast enough to solve the problem; some private sector involvement is needed to move things forward'.

The Guide to Responsible Engagement in Water Policy (referred to in Section 2.2) nevertheless urges companies to 'facilitate and assist government's policy goals by helping to support institutional capacity, helping to create effective and equitable policies, and encouraging multi-stakeholder dialogue' (CEO Water Mandate 2010, p.37, emphasis added). In relation to water stewardship, the question arises, how much it is intended by a given water stewardship initiative that:

(i) government 'pick-up' the stewardship actions and lead; or alternatively
(ii) that 'significant management decisions are removed from the political arena and debate' (Hernández-Mora and Del Moral, 2015). Where a company favours, in effect, smaller rather than stronger government, it is difficult to see how Principle 1 of the Guide for Managing Integrity in Water Stewardship Initiatives, 'to support and strengthen public policy' (Box 5) will be followed. Yet, it is clear that markets require a strong regulatory framework to operate well.

It has been seen in Section 4.12 that governments seeking to leverage private finance for major water infrastructure to make up for a public funding gap will often be disappointed, unless they offer the umbrella of a guarantee. The onus of raising finance cannot be delegated to the private sector without an important public role. Similarly, public administrations responsible for systems of water resources management cannot simply hand over allocation decisions to market forces without careful oversight. Water stewardship initiatives should be looking to support better regulation and monitoring by government as a core foundation of their business plan. Equally, donors investing in stewardship initiatives should ensure a balance by supporting private sector engagements that include support to regulatory bodies and other governance mechanisms.

5.4 The investors' perspective again - disclosure

Among the findings of the 2015 CDP water report, CDP notes (CDP, 2015, p.6) that 'engaged investors want to see strategic[137] corporate water stewardship integrated into standard business practice. CDP states that 'leading companies are beginning to do so - corporate water stewardship is becoming better understood'.

CDP states with regard to disclosure by companies for the benefit of investors:-

> 'After 6 years of investors and customers requesting water data through CDP's water programme, there has been an 8-fold increase in the number of companies submitting data. Despite this, there is still room for improvement. There remains a large number of companies that fail to meet their investor requests for data – 668 failed to disclose water data to investors via CDP in 2015 alone 668 in 2015 alone. In addition, the quality of the data provided in some cases leaves a lot to be desired. At a time when the investor demand for this data is growing louder (as evidenced by the record-breaking 433 social and environmental shareholder resolutions filed so far this proxy season), companies are increasingly being called to be accountable for improvements in both the breadth, quality and usefulness of data disclosed'.

While the top eight CDP Water A List companies in 2015 are leading examples of good disclosure[138], other companies are, according to CDP, doing more in water management and stewardship than they perhaps disclose. The solution to that is better disclosure. Alex Money of the University of Oxford, emphasises, based on interviews with chief investment officers (as compared with socially responsible investment personnel), that investors would like companies to 'step away from descriptive, qualitative CSR content ('"fewer glossy photos of poor kids playing next to sprinklers")' to concentrate on 'materiality in their disclosure' with 'data that can be quantitatively evaluated, meaningfully' (Money, 2014). Where companies, especially major corporates, are slow - for whatever reason - to adopt that approach, they risk undermining a key premise of corporate water stewardship, namely that companies are ready to submit voluntarily to protocols and processes for information-sharing as part of greater openness in their dealings.

137 'Strategic' involves 'not only an understanding of a company's water dependency, but the context in which it operates, and how this relates to other water users' (CDP, 2015, p.16).

138 Depending also on how the discloser fills in the questionnaire.

From investors' perspectives, the issue arises of a disconnect between the financial investments and contribution to stewardship activities made by major companies, the for-profit entity, on the one hand and their philanthropic arms (foundation or charitable trust) on the other. Is there – is there intended to be - a strategic link between investments out of core business budgets and philanthropic gifts? 'Investors', commented one international specialist on responsible investment, 'are interested in activities which enhance the resilience of the business, not peripheral works of charity'. 'The targets set by companies have to be the right kinds of targets to impress investors'. This is discussed further below in Section 5.5.

5.5 Assessing corporate 'water behaviours' to-date

As for evolution of corporate 'water behaviours', the following is an assessment of the current status, based on the present study. Figure 4 in Section 2.9 presented an analytical framework for identifying and differentiating how companies manage water and water-related investments and that figure is reproduced here as **Figure 6**.

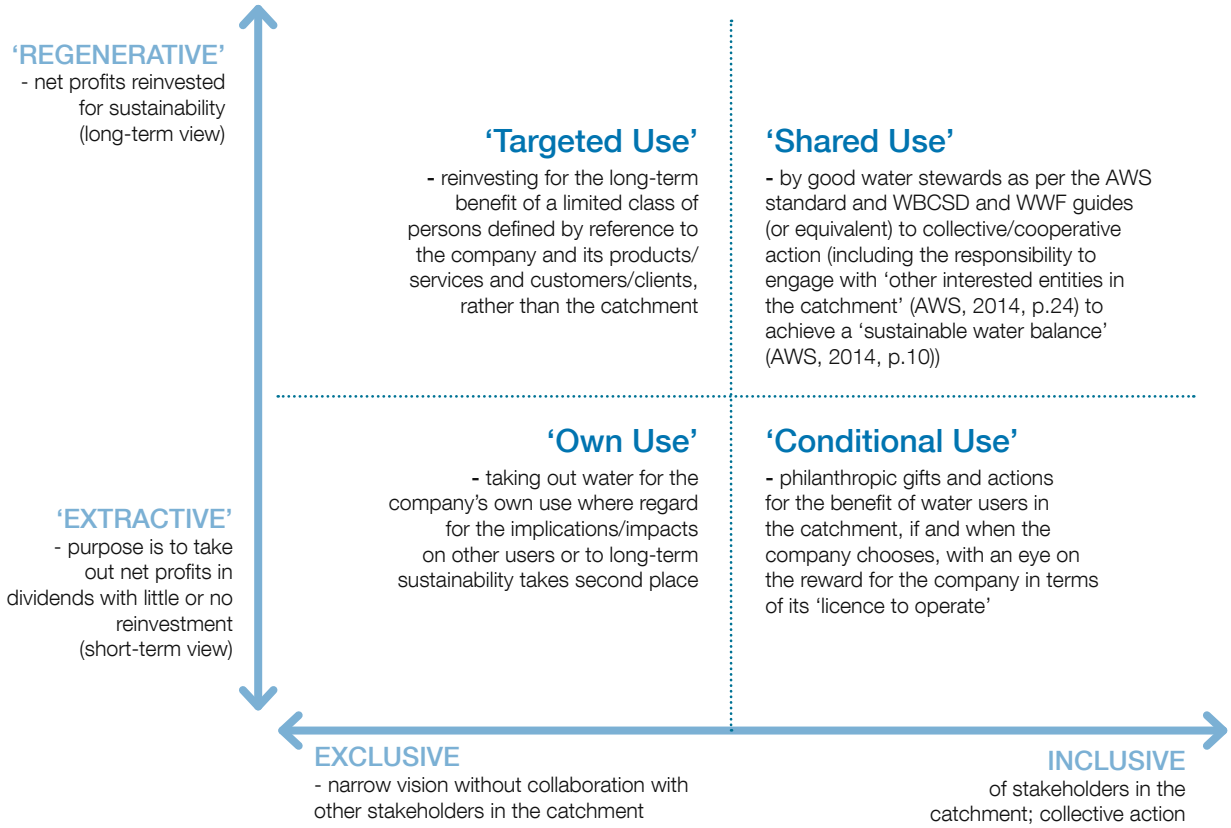
As noted in Section 2.9, the key interest is to assess how far companies have reached in relation to water management in catchments beyond the 'factory fence', i.e. beyond Steps 1-3 in the WBCSD, WWF and AWS scales. The international guides/standards for water stewardship clearly state that it means much more than reducing water consumption at the individual premises or 'site', although that is part of 'responsible' water management.

The top-right quadrant in Figure 6, 'Shared Use', corresponds with water stewardship as defined by the AWS and EWS standards as well as the WBCSD and WWF guides. **Promoters of the international standards/guides will be looking to see evolution of corporate water behaviours from the bottom-left, Own Use, to the top-right quadrant, Shared Use, in Figure 6.** Regulators and policy-makers may also play their part in that, using guidance and incentives, or through more demanding change to water quality discharge permits, for example.

The evidence gathered by this study suggests that, as regards water management *beyond* companies' own plants/premises, there has been little evolution as yet from 'business-as-usual'. Multinationals are taking time to comprehend the diversity of water-related contexts in which they are operating and are wary of engaging in the collective action 'beyond the factory fence' that is characteristic of water stewardship as defined by the international guides/standards. Few companies are engaging as yet, although with some prominent exceptions. The current water behaviours of most companies reflect a narrow and short-term vision corresponding to the bottom left-hand Own Use category in Figure 6.

Aerial view of Cape Town, South Africa © Shutterstock/lenisecalleja.photography

Figure 6: Corporate 'water behaviours' – assessed



As an example of the bottom right-hand quadrant in Figure 6, 'Conditional Use', key to the approach of the Coca-Cola Company, said a Coca-Cola executive, is the role of the charitable foundation[139]. The board of the company decides, periodically, on amounts to be transferred to the foundation out of net profits of the business (after tax and other liabilities). As a charitable organisation with special section 501(c)(3) status under US tax law, the foundation is more easily able to enter into agreements with international donors and organisations, including NGOs, to co-fund water stewardship initiatives, while the section 501(c)(3) status prohibits the foundations from entering into activities to benefit private shareholders and individuals, including the shareholders of the company. The roles, in other words, are 'differentiated'.

The Coca-Cola representative went on to say:-

> 'This is reflected in the types of activity funded, typically, by the business and by the charity. **The further** from the factory fence an action to improve water management in the catchment is located, **the more likely** it will be supported by the foundation, allowing the manager of the company's plant (or partner company's plant) to focus funds out of his/her business budgets on investments more directly related to operation of the plant[140]. The for-profit company's niche role is to manage the private business which generates surplus income for the foundation to fund common/public good projects' (emphasis added).

This places the activities of the company (the for-profit) in the Own Use bottom-left quadrant in Figure 6, whereas the role of the charitable foundation is in the bottom-right quadrant, Conditional Use. This raises the question of to what extent the business practice of the principal, for-profit arm of The Coca-Cola Company has evolved into water actions of type (iii) and (iv) in the WBCSD classification in Box 2 in Section 1.4 (and Step 4 in the WWF and AWS scales in Figure 3) or whether its water actions are mostly or exclusively limited to types (i) and (ii) in the WBCSD classification (Steps 1-3 in the WWF and AWS scales)?

139 Strictly foundations (plural), because there are a number of Coca-Cola foundations in different locations, though under the common legal umbrella of the US-based foundation.

140 Another corporate representative referred to a 'timing issue', namely that it is easier for a charitable foundation to enter into a multi-year arrangement than a plant which is more closely bound to an annual cycle of financial planning and accounting. Carrying a balance year to year for the company entity is more difficult.

The importance of this question is underlined by the amounts donated by charitable foundations which may, at first sight, appear substantial, but are typically modest when compared with the profits of the commercial company/group, especially of multi-nationals, that go to external stakeholders somewhere else. In 2012, for example, The Coca-Cola Company reported philanthropic donations over five years of US$247 million to 'community water partnership' projects – an average of around US$50 million per year (The Coca-Cola Company, 2012). This compares with US$8.6 billion in net income attributable to shareowners of the company in the financial year to December 2011: a ratio of 1:172[141]. Compared with those donations from the Coca-Cola Company's philanthropic foundations, how much funding has been applied by the Coca-Cola Company to water management in the catchment beyond the factory fence out of business budgets?

The representative of another multi-national company with a charitable arm echoed this as a key issue. She said she had seen colleagues in other companies 'really struggling to do any water-related work'. 'It depends' she said, 'where the money comes from':-

> 'Our water work is funded by the company's foundation. This is a strategic choice. Corporate culture means that any allocation from core budget suddenly moves into the realm of quarterly returns from that spend/investment, profit generated from that allocation, etc. For water stewardship, however, it is actually a much more subtle issue – about reducing risk, managing expectation, etc. – which cannot be shown in a quarterly profit report. Foundation money is much easier to access, and without it our company would not be doing this stewardship work. It provides flexibility and allows the company to invest in longer term strategic issues that it needs to be aware of'.

The person in question felt lucky to have this alternative philanthropic source of funding available.

In other words, foundation finance is flexible, but it is different – **it is less corporate-DNA-driven**. That makes for a weaker link between businesses and impacts. Where an initiative funded by the philanthropic/charitable foundation achieves impacts, are those impacts due to changing business practices? The statements of companies tell of many new initiatives such as those referred to in Section 3, motivated by business concerns about water risks (water scarcity and quality), but **a key question is whether the responses constitute core business, or corporate social responsibility (CSR) with a gap between business concern and philanthropic response**? In other words, **how far has the 'business DNA' really evolved towards water stewardship**? Where impact is occurring, is this in practice through conventional water management 'projects' supported by philanthropic finance operating at relatively small scale to the challenges faced?

The impression is that - to-date at least - companies are falling largely short of the water stewardship standard. This is perhaps to be expected given the relative new development of water stewardship initiatives. The leading examples of water stewardship are few, for the moment, i.e. does the promotional and marketing rhetoric of corporates match the reality (or anywhere close)?

As for the water stewardship initiatives which are exceptions to this general rule, how they contribute to 'Shared Use' could usefully be the subject of independent evaluation.

A further observation from this study is that among the 'drivers' of corporate behaviours in Figure 1 in Section 1.5 of this paper, the most significant, currently – according to the interviews conducted during this study – are those intrinsic to the company (in (A)), namely: mission/purpose, culture, corporate finance and sector/industry (the nature of the company's operations). The diversity of those intrinsic elements is reflected in the range of testimony recorded in Sections 3 and 4 above. Compared with these internal drivers of the companies consulted - the other external drivers look relatively weak[142]. Regulators and investors, for example, seem to be struggling to formulate rules, principles and incentives (checks and balances) which take account of the diversity of 'private sector' companies operating in a diversity of water and other contexts. Meanwhile, rules for accounting for natural capital are in their infancy (as noted in Section 3.3).

141 There is no doubt that for globally recognisable brands, whether the work is funded by the corporation, or by the corporation's foundation makes little difference in the over-arching brand impression to the consumer. That is part of the attraction for corporates, particularly their marketing and communications departments. The differentiated roles will frequently go unnoticed by the public.

142 An example of external pressure by campaigning is that by Greenpeace UK in June 2016 alleging that General Mills has not been paying sufficient attention to its supply chain in respect of purchase of palm oil which is, Greenpeace says, destroying forests (Greenpeace, 2016).

Much depends on attitudes and approaches to climate change. In a September 2016 report, the Blackrock Investment Institute, a major US global investment manager, notes that 'investors can no longer ignore climate change'. 'The economic impacts', it says, 'are not just in the distant future'. 'More frequent - and more intense - extreme weather events such as hurricanes, flooding and droughts are already affecting assets and economies'. Yet, Blackrock adds:-

> 'Governments, investors and consumers have been slow to appreciate climate factors … Markets tend to focus on the shark closest to the boat. Risks we can see, especially visceral ones, occupy most of our attention. Contentious elections, referenda and monetary policy decisions dominate headlines. The effects of climate change are less visible and perceived by many as distant. This leads to a bias toward inaction. Bottom line: we believe climate factors have been underappreciated and under-priced' (Blackrock, 2016, p. 3).

To lever change in corporate practices, investors can act to exert pressure on companies. A group of fund managers – big global names – have, for example, recently combined to challenge the corporate governance of the UK company, 'Sports Direct', for non-compliance with labour laws[143]. The question arises how far investors, as well as occasionally sanctioning *bad* practice as in the Sports Direct case, are systematically pushing forward *good* practice. As noted in Section 5.4, CDP reports an 8-fold increase in 6 years in the number of companies submitting data relating to water management, but notes that this is work-on-progress and 'in some cases, the quality of data leaves a lot to be desired'. Further, as an international specialist on responsible investment stated to the authors of the present paper: 'Investors are interested in activities which enhance the resilience of the business, not peripheral works of charity'.

An example of behaviour in the top left-hand quadrant in Figure 6 is that of Welsh Water – see **Box 13.** Welsh Water is a private company providing water (and sanitation) services-WASH, i.e. a water utility. It is also, in part, a water resources management company because, as noted in Section 3.3, the water utilities in England and Wales are obliged, by law/regulation (Government UK, 2012) to produce, every five years, long term water management plans setting out how the company intends to maintain the balance between supply and demand for water over a 25 year period - a case of regulation used to influence corporate water behaviours to move from the bottom to top level in the Figure.

Box 13. Welsh Water – an alternative form of company

Welsh Water is unique in the UK Water Industry in that, while a private company, it is owned and managed for and on behalf of its customers. Welsh Water's circa 3 million customers include most of the residents of Wales and some 300,000 in England. In implementing the company's Vision, the question its directors ask is, simply, 'What must we do to earn the trust of our customers?' noted the representative of Welsh Water consulted during this study. Similarly, the purpose of driving efficiencies is not to fund dividends to shareholders but, first, to meet the business plan commitments the company has given to customers in terms of service levels. The company's purpose is, secondly, 'to continue to win the confidence of investors and thus maintain the lowest levels of borrowing costs of any utility in the UK', and, thirdly, 'to finance investments to further improve services for customers, and in so doing deliver the Vision'. That includes 'long-term planning' to identify the 'serious challenges to [the company's] business and wider industry over the next 25 years' such as 'changing weather patterns', 'population changes' and 'changing technology and customer expectations'[144].

Welsh Water is a useful example of the top left-hand quadrant. Welsh Water either reinvests all its net profits in improvements to the water supply and sanitation services by accelerating capital investment, or it seeks to lower bills and extend the assistance it provides to vulnerable customers who may be struggling to pay their bills. The example of Welsh Water (as a company limited by guarantee) compares and contrasts with the common form of company limited by shares whose core purpose in driving efficiencies is typically to produce benefits for shareholders in the form of dividends taken out of the company. Welsh Water comes within the top left-hand quadrant in Figure 6, called 'Targeted Use', in that the actions of the company are not 'inclusive' in the manner required by water stewardship according to the AWS and EWS standard – the top right-hand quadrant in Figure 6. As described in Box 13, the class of persons whom Welsh Water serves is defined and limited. Its customers and clients are a sub-

143 'Sports Direct Slammed as Investors Snap Over Governance': http://www.bloomberg.com/news/articles/2016-08-25/sports-direct-slammed-as-investors-snap-over-board-governance

144 Welsh Water Business Plan 2015-2020, p.6-7.

set of community and society[145]. The ownership model of Welsh Water supports its long-term vision. The prevailing short-termism of most company shares on stock markets does not apply.

The example of **customer-owned** Welsh Water is important in highlighting the existence of alternative corporate missions and forms which help companies to pursue water stewardship (Newborne, 2012). Depending on the nature of the company's shareholdings and the degree of leadership of company directors in inducing and maintaining a sustainability culture, it will typically be more difficult for a **shareholder-owned** company to reach the top two quadrants in Figure 6. It is important to note that the structure of shareholdings in shareholder-owned companies can differ. One person referred to the example of a big company where the family owns a majority of its shares, which the company representative said offers a 'big opportunity': 'decisions were taken which could not have been, were it a company with shareholders more widely spread, e.g. companies listed on stock markets. The question arises how far the directors and managers of a company with, in contrast, a diverse (and fluctuating) set of shareholders will be able to instil and maintain a culture of sustainability?

If the adoption of alternative and hybrid company forms seems alien to some water resources management specialists, it is not in the field of water utilities supplying WASH services – witness the role, for example, of companies which are publicly-owned but which are placed under a legal obligation to operate according to commercial principles, e.g. the case of the urban water and sanitation utility in Burkina Faso in West Africa (as discussed in Newborne, Tucker and Bayliss, 2012). 'Para-statal' companies owned partially by the state and partially by the private sector are another example of a mixed mode.

5.6 Roles - again

How is it envisaged that the public sector will play a role in water stewardship initiatives?

The analysis by Sojamo (2015) of the five stewardship initiatives in South Africa noted that 'a stronger lead from the government was called for' (Sojamo, 2015)[146].

What is the wisdom/validity of proposing that the private sector remedy a public governance gap including when strong public governance capacity in the form of robust regulatory agencies is needed to oversee/handle private sector involvement? The 'public governance gap' in water management will not be filled by trying to stretch company activities beyond the roles they are ready and equipped to carry out – as discussed in Section 6.2.

As for the future of corporate roles in water management, that will largely depend on how corporate cultures evolve – alongside the other intrinsic drivers of corporate water behaviours.

Ganges river, Varanasi, India © Shutterstock/Kurkul

145 Similarly, drinks/beverages companies and breweries may achieve sales to many people in a locality, but not all the population. Welsh Water is not responsible for providing a waste water disposal service to households and premises in isolated rural locations which are not connected to the company's sewerage network.

146 At the time of the Sojamo study, the stewardship initiatives in South Africa 'had not addressed the major, albeit politically difficult issues such as water licensing or water re-allocation'.

Summary and key points – Section 5

This Section has considered the bigger picture of water resources management. In contexts of increasing water demand and climate variability, competition for water resources is intensifying. By way of response, most OECD countries are, or have recently been, reviewing and reforming their water allocation arrangements. The English example illustrates the transition that needs to be undertaken from a system which is no longer fit-for-purpose to a reformed system. Governments are responsible for setting out national frameworks for water resources management. Those can have scope for water users to decide on local allocation rules. Those arrangements may be supplemented by direct payments to farmers for their management of natural resources (including water) paid by public bodies. In developing and especially low-income countries, external support from donors will often be needed to fund strengthening of public sector capacity – stronger government.

The evidence gathered by this study suggests that, as regards water management beyond companies' own plants/premises, there has been little evolution as yet from 'business-as-usual'. Companies are taking time to comprehend the diversity of water-related contexts in which they are operating and are wary of engaging in the collective action 'beyond the factory fence' that is characteristic of water stewardship as defined by the international standards/guides. Few companies are engaging as yet – although with some prominent exceptions. The current water behaviours of most companies reflect a narrow and short-term vision corresponding to the bottom left-hand 'Own Use' category in Figure 6.

- The 'struggle for power and politics over water between different actors' highlighted by the author of the 2015 study referred to in Section 4.16, is the competition for access to water in contexts of increasing water and climate variability. 'Water stewardship' can contribute to the public good of improved water management, but it is not enough. Governments are responsible for setting and overseeing the frameworks for water resources management. That includes review and reform of water abstraction and allocation.

- Many governments are working on reforms – water resources allocation is a dynamic policy area. Motivations for reform include environmental, societal (equity) and economic, in line with the goals of water stewardship and IWRM.

- The role of NGOs and donors as brokers of improved water management is key, including in support to strengthening of government capacity in developing countries.

- In reforms to water resources management, market mechanisms - transferable water rights and water markets - are increasingly being proposed as the means of allocating water. The question arises whether the aim of proposals for market allocation mechanisms is stronger government, or smaller government. In relation to water stewardship, that corresponds with, respectively, the option of government 'pick-up' of water stewardship initiatives, or alternatively the option of removing significant management decisions from the political arena and debate.

- Investors want to see corporate water stewardship integrated into standard business practice. Some companies - the leaders - are beginning to do so, including through disclosure of data.

- An analytic framework has been proposed in Section 5.5 for differentiating corporate 'water behaviours'. 'Own Use' refers to cases where companies focus on their own 'sites' more than, or instead of, collaboration with other stakeholders in the catchment, with corporate decision-making driven predominantly by the company's short-term objectives, above considerations of long-term sustainability.

- 'Conditional Use' refers to support by the philanthropic arms of companies (Foundations) to initiatives funded by charitable foundations. This category of 'do-as-and-when-you-feel-like' actions does not answer the question of how far has the 'business DNA' of corporates has evolved towards water stewardship.

- An alternative form of company illustrates the category of 'Targeted Use'. Customer-owned Welsh Water compares and contrasts with the common form of company limited by shares. The example of Welsh Water is important in highlighting the existence of alternative corporate missions and forms which help companies to pursue water stewardship. The ownership model of Welsh Water supports its long-term vision.

- 'Shared Use' corresponds to water stewardship. The impression is that - to-date at least - companies are falling largely short of this water stewardship standard. The leading examples of water stewardship at Step 4 in the three guides/ standards are few - for the moment. This is perhaps to be expected, given the relative newness of water stewardship initiatives.

- Among the current 'drivers' of company behaviours, the most significant, currently, according to this study, are those intrinsic to the company: mission/purpose, culture, corporate finance and sector/industry. The diversity of those intrinsic elements is reflected in the range of testimony recorded here. Compared with those internal drivers of the companies consulted (mostly multinational companies), the other external drivers look weak. Regulators and investors, for example, seem to be struggling to formulate rules, principles and incentives which take account of the diversity of 'private sector' companies operating in a diversity of water contexts.

- Much depends on attitudes and approaches to climate change. As a major US global investment manager notes: 'Investors can no longer ignore climate change'. 'The economic impacts', it says, 'are not just in the distant future'. 'Yet, 'governments, investors and consumers have been slow to appreciate climate factors …. the effects of climate change are less visible and perceived by many as distant. This leads to a bias toward inaction. We believe climate factors have been underappreciated and under-priced'.

- To lever change in corporate practices, investors can act to exert pressure on companies. A group of fund managers have recently combined to challenge the corporate governance of the UK company, 'Sports Direct', for non-compliance with labour laws. The question arises how far investors, as well as occasionally sanctioning bad practice as in the Sports Direct case, are systematically pushing forward good practice.

- IWRM is, like stewardship, designed to be 'inclusive' and 'regenerative' which means that it properly also sits in the top right-hand quadrant in Figure 6, as a process designed to achieve 'shared' water use. A stronger lead from governments is needed.

- As for the future of corporate roles in water management, that will largely depend on how corporate cultures evolve – alongside the other intrinsic drivers of corporate water behaviours. The 'public governance gap' in water management will not be filled by trying to stretch company activities beyond the roles they are ready and equipped to carry out.

Maputo, Mozambique © Shutterstock/Simon_g

6. Taking stock: progress in water stewardship; roles in water resources management; gaps and recommendations

This section takes stock of evolution to-date in corporate water management and stewardship, based on the interviews conducted and documentation reviewed, and considers the role that private companies may play in water resources management in the future.

The questions posed in Section 1.2 are recalled as follows (in reverse order):-

What is the current status of progress by companies as against the international standard and guides to water stewardship? Another way of expressing that is how far are companies aiming, and reaching, in the types of action and steps of the World Business Council for Sustainable Development (WBCSD), WWF and the Alliance for Water Stewardship (AWS) set out in Figure 3 in Section 2.1.

What sorts of contribution may private companies make to water resources management – system-wide (across catchments/basins and countries)? i.e. what is the role(s) of corporates and how does it fit in the 'big picture' of water resources management with its many actors and stakeholders and its challenges and complexities? The bigger picture of water resources management has been considered in Section 5.

6.1 Progress to-date in water stewardship

As for the progress made to-date in corporate water stewardship - in promotion and adoption of the international guides/standards - it is early days - generally too soon - to make an assessment of the success or otherwise of specific water stewardship initiatives in terms of their development impacts. Similarly, the system of certification under the international standards of the AWS and the European Water Stewardship (EWS) is work-in-progress.

The evidence examined during the course of this study suggests that relatively few private companies[147] are engaged, at least as yet, in collective action 'beyond the factory fence'. Most actions to-date have been examples of Steps 1-3 in the WBCSD, WWF and AWS scales in Figure 3. Those three steps relate to preparatory stages such as information-gathering and planning, as well as internal water efficiencies within companies' plants/premises and some projects in the catchment (beyond the factory fence) which WBCSD explicitly classifies as cases of corporate social responsibility (CSR). The examples of the greater level of engagement in collective action (Step 4 in the three scales) are, to-date, exceptions to the general rule. Based on the evidence collected during this study, where companies are working to show they are responsible 'societal players' (WBCSD category (iii)), they are doing so either by funding catchment projects through (mostly) their philanthropic foundations or by supporting (a small number of) projects out of business budgets.

Companies are not advancing through the steps in the three scales as much as some promoters and commentators of water stewardship have expected, nor perhaps corporate leaders themselves given the repeated warnings of water risks[148]. In some cases, that is the deliberate choice of the companies concerned - wary of engaging in collective action beyond the factory fence. The step up to collective action (Step 4 in Figure 3) is demanding in terms of the stakeholder-inclusive processes that water stewardship initiatives are expected to put in place in order to achieve social, economic and environmental objectives. The bar, in other words, has been set high. That seems to be deliberate, but it means that more attention needs to be paid to identifying the niche role(s) of for-profit companies (shareholder-owned companies, and other). According to the WWF guide and AWS standard, water stewardship brings with it the explicit responsibility of each actor to contribute to the public good. That is central to the concept of water stewardship, and raises the following question. Where there is a tension between individual and collective interests – where the need for a trade-off presents itself – will a given water steward, e.g. a corporate, pursue its individual objective or opt for collective benefit? That question goes to heart of the *raison d'être* of corporates. How far companies have a responsibility to society is a contested issue (Newborne, 2012).

147 As stated at the start of this paper, the companies consulted during this study have been mostly (not exclusively) multinationals headquartered in the US and Europe, including prominent participants in the corporate water management and 'stewardship' debate.

148 In 2016 the World Economic Forum reported in its 2015 global risks report that Water crises are a top global risk.

Company lawyers disagree whether the purpose of a corporation is to serve the interests of shareholders to the exclusion of others (as long as the company operates within the law), or whether company directors should, or can, take account of other stakeholders, including local communities. The efforts to make water stewardship work in practice will be better served by recognition of what corporates, or a specific corporate, are/is ready, and not ready, to contribute - a debate, in other words, that has its commercial and business (and legal) 'feet on the ground'. When and how is a company ready to go beyond its individual interests to work for collective ones?

The Carbon Trust has pointed to businesses simultaneously living in two realities: the need to meet 'short-term business goals' and the recognition of an 'uncertain future' where they need to address sustainability challenges. What they do not see, says the Carbon Trust, is the *pathway* to move from one to the other – in the words of a representative of an oil and gas company, the way to 'transition' from one to the other. He was speaking about the transition of his company from fossil fuels to low-carbon energy sources. The challenge of transition applies also in relation to water management. Companies will need to *transition* from the status of water, currently, as a medium risk, but low priority[149], to (increasingly) a medium (or high) risk and medium (or high) priority. As compared with the global nature of carbon emissions, the degree of difficulty for corporates' transitioning in water management is heightened by locally-specific hydrological and climatic conditions. It appears that business continuity does remain a core focus of corporate actions (Jones et al. 2015).

Expressed in the terms set out in the analytical framework in Figure 6 in Section 5.5, corporate water behaviours need to effect the transition from the bottom left quadrant in Figure 6, characterised as 'Own Use', where they are positioned predominantly, at present, to the upper right quadrant in Figure 6, called 'Shared Use'. While the increase in philanthropic giving has presumably been appreciated by the communities who have particularly benefitted, the 'Conditional Use' projects – the bottom right quadrant of Figure 6 – which are based on the good will of the companies in question are not indicators of change in 'business DNA'. The typical actions of companies (or, at least, shareholder-owned for-profit companies) remain largely in the Own Use category.

To the question, therefore, what evolution there has been to-date from 'business as usual' in relation to water management, the answer is not much – at least as yet. In line with what Caplan (forthcoming, 2016) says about partnership working in the water sector, there is a gap between the rhetoric and the reality. Where private companies continue to use their philanthropic foundations to fund water stewardship initiatives instead of core business budgets, doubts will remain as to how far those companies' water management practices - their business models and operations - have evolved. It will be interesting to see how those practices advance in future, and if business models develop beyond activities that look to secure water rights, and potentially defuse opposition.

With regard to water in agricultural supply chains, *what* is grown *where* (choice of crops taking into account water availability) is as important as *how* it is grown (water use efficiency). An issue for consideration is how far there are signs of major agricultural buyers pushing for more rational water use by moving their purchase of agricultural products/commodities to new producers/growers located in different places where water constraints are not affecting supply, and where climate variability in the original source of supply looks likely to become a regular or frequent condition. Thornton (2012) notes that:

> 'Extensive research needs to formulate targeted, region-by-region approaches that recalibrate agricultural production according to the effects of climate change. In some cases, this could require farmers to embrace entirely new crops' on their lands (Thornton, 2012, p.4). The objective will be to determine which crops in which locations are 'appropriate products' (Porter and Kramer, 2011) in water terms, based on the concept of 'natural comparative advantage' (discussed in Section 3.9).

Among the 'drivers' of corporate water behaviours shown in Figure 1, the most significant, currently, are those intrinsic to the company: mission/purpose, culture, corporate finance and sector/industry. Compared with these drivers of the companies consulted (mostly large multinational companies) the other external drivers look weak. As reported by the Carbon Trust in 2015, 'consumers, governments and investors together do not provide sufficient incentives for businesses to take the necessary action to address climate change and resource scarcity' (Carbon Trust, 2015, p.11). Regulators and investors seem to be struggling to formulate rules, principles and incentives to influence corporate behaviour at least beyond Steps 1-3 in the WBCSD, WWF and AWS scales.

149 As one commentator expressed it: 'If, priority is really high for businesses, as some sources want us to believe, why are donors having to use public money to bring companies to the table to 'seed' the conversations between companies and other actors?'.

Meanwhile, the companies themselves are struggling with the diversity of water-related contexts in which they are operating. They would no doubt prefer to have one company 'handbook' on how to manage water, containing tools that they could apply widely across operations in different places. But, hydrology of course varies from catchment to catchment and the political and cultural content of water management varies from country to country, as does regulation and the viability and impact of multi-stakeholder platforms.

The question arises what constituency or constituencies, amid the drivers in Figure 1, are important to a shareholder-owned for-profit company? Is it outreach to shareholders/investors and the stock market, outreach to beneficiaries of philanthropic projects, outreach to policy makers and political decision-makers, or outreach to the general public including customers – purchasers of the company's products? Maybe the answer is: all those constituencies, equally. But what about the tensions between the interests of those constituencies[150]? The alternative company form illustrated by Welsh Water (in Section 5.5) reduces and focuses the number of constituencies that the company has to serve.

Since 2012 when the special issue of *Water Alternatives* on corporate engagement in water policy (referred to in Section 1.1) was published:-

- there have still, as yet, been few certifications under the AWS standard; the majority of companies consulted during this study know of the standard, even if they have decided not to apply them themselves (or not closely). The AWS standard sets out a clear code for aspiring water stewards, although the steps in the codes were viewed as demanding and even burdensome by some companies. The question arises how far companies will commit to go down the stewardship road and be willing to stay as active participants in stewardship initiatives.
- the AWS standard, and the WBCSD and WWF guides, are voluntary codes. Does this mean they will become just 'do-as-and-when-you-feel-like' exercises, without enough committed adherents? **Until the culture of companies evolves to make the move to the corporate water behaviours in the upper quadrants in Figure 6, particularly 'Shared Use' (the top right quadrant), the uptake of the standard/guides is likely to be low.** The short-term pressures on companies are a key disincentive to changed behaviour;
- there have still been few independent evaluations and research studies of stewardships initiatives in-country; exceptions are the study by Sojamo (2015) and by Hepworth (2015) referred to in this paper. This means that there is still little documented evidence of the outcomes of stewardship; a further exception is the evaluation in 2014 of the activities of the 2030 Water Resources Group (Dalberg, 2014);
- further study has been conducted of business responses to resource scarcity in the context of climate change; businesses believe that change is coming, but less than half the business leaders surveyed in the 2015 Carbon Trust study considered that the drivers of change are present and operating now.

The question arises how well suited private for-profit companies are to do what is being asked of them by the demanding international water stewardship standards/guides. What is the role of for-profit companies in relation to water resources management? At what point, does a company (or other party engaged in collective action) begin to lose itself in roles and activities for which it is not well suited?

As for the thinking underlying water stewardship, private companies, especially large multinationals, are generally capable of mobilising resources (human and financial) when they choose. On that basis, corporate water stewardship has been promoted as a solution to water resource management problems with the prospect of progress achieved more quickly than by many governments. The criticism of IWRM has been that implementation of IWRM processes is slow. Yet, in the light of the rate of progress in the steps to water stewardship to-date, the change in the culture of private companies towards water management also seems to be slow - 'guarded', said one person consulted.

Companies are also capable of innovation. The question arises: how innovative are they being in addressing water risks? In the face of hydrology which is local and changeable, there is a need for flexibility - operational ideas to fit production, storage and distribution of goods (services) to fit the changing local conditions including oscillating water supplies and peaks-and-troughs of water availability. Beyond the water use efficiencies being affected by companies, it is not clear how much innovation is actually occurring (e.g. product innovation, sustainability transition etc.).

150 It is interesting that in all the 1300 sections, 16 annexes/schedules and 700 pages of the UK Companies Act 2006, 'conflict of interest' is only referred to in relation to third party interests of company directors (in two sections, 175 and 176). It seems to be assumed that no conflicts of interest arise between the constituent parts of the company itself.

6.2 Role(s) of private companies in water resources management

As noted above, the other question posed in Section 1.2 was: **What sorts of contribution may private companies make to water resources management – system-wide (across catchments/basins and countries)?** i.e. what is the role(s) of corporates and how does it fit in the 'big picture' of water resources management with its many actors and stakeholders, and its challenges and complexities?

Table 2 shows the 'Essential elements of effective water management', as per the Perry framework in Table 1 in Section 1.2, and suggests roles. The current status is summarised in the 4th column of Table 2 based on the evidence from this study. Further, the roles that corporates (and government, donors and NGOs) should lead in the future – and should not lead[151] - according to the interpretation of the authors of this paper, are set out in the 5th column of Table 2.

Bags of beans and grains © Pixabay

One gap to be filled, as noted in Table 2, is the lack of accounting principles and practices to value water and other natural assets and liabilities/risks in company accounts. Accountancy rules and practices can exert key influence on business practice, but the common 'rule-book' of accountancy does not – as yet, at least - tell companies how to reflect water and other natural assets and liabilities/risks in their accounts. A potentially influential driver of sustainability is, therefore, lacking. Modified accounting rules, once set at international level, would be applicable to company operations in multiple countries. They would thereby constitute a common code for all corporates and be a spur to companies to progress towards the upper quadrants in Figure 6.

One reason for the entry of private companies into water stewardship is the slowness – or, in the eyes of some, fundamental failure – of governments in discharge of their responsibilities for water resources management. The corporates and other actors (NGOs, donors) leading water stewardship initiatives are, in other words, aiming to show how they can make up for the 'public governance gap'.

Companies should surely not be looking to *fill* the public governance gap because that would be entirely to take over the role of governments whose responsibility it is to set out and oversee the systems governing

151 As one commentator expressed it: what is the 'line in the sand' of corporate engagement?

water resources, to lead - in the language of Perry's framework - the 'Bargaining' and 'Codification' elements of water resources management in Table 2. Instead, through water stewardship, the private sector and civil society (large companies and NGOs) are exploring afresh which roles and responsibilities in implementation of water resources management may be delegated to them ('Delegation' in Figure 6).

In relation to the 'Bargaining' and 'Codification' in Table 2, a stronger lead from national governments is needed. Governments of developing countries need to tackle the challenge of reviewing and reforming their water abstraction regimes so as to prepare for systems of governance of water allocation capable of operating in contexts of heavy abstraction and climate variability. This is time-consuming, but necessary. Multi-stakeholder initiatives and other collective actions that do not support governments in 'swallowing the medicine' of abstraction reforms to manage water resources in contexts of climate variability and increasing demand are not well-focused. In the 'shifting paradigm' of a 'redefined water sector' (Section 1.1) which has seen increased involvement of private companies (especially multinationals) in water debates, there is a danger that the role of government in leading water reforms is side-lined. Leaving stewardship initiatives to drive Bargaining without governments being closely involved raises real concerns over legitimacy and policy capture.

As noted in Section 4, companies tend to be ambivalent about reform of water resources management. While sometimes saying that existing regimes are failing, many are wary of new laws/regulations making changes in compliance requirements, especially in relation to water charges/pricing. In the context, however, of demographic and climatic pressures on water resources, companies need to be ready to discuss/negotiate and accept caps or reductions in water withdrawals in heavily water-stressed catchments where there is intense competition between water uses, since in those circumstances trade-offs and compromises will often be necessary. The comment of one international water policy specialist that 'some companies think they can game it, but they need to see they will likely have to take a cut [in water withdrawals] in the medium or long term' was noted in Section 4.9. The question arises how far companies seek to use water stewardship initiatives as a means to conduct Bargaining on water policy via the 'backdoor' of Delegation – delegation supposedly of water projects. As noted in Table 2, **there is, currently, considerable ambivalence as to which roles/responsibilities are appropriate for 'Delegation' to private companies**. In relation to the first 3 Steps of the WBCSD, WWF and AWS guides/standard, there is much emphasis on trust and relationship-building, but where is the attention to clear roles in collective action (Step 4)?

Vietnam, Mekong river delta. Boat on traditional floating market © Shutterstock/Banana Republic images

Table 2. Corporate roles - for effective water resources management (adapted from Perry, 2013 and expanded by the authors)

Element		Definition of element	Current status	Roles: who should preferably lead which elements? (including corporates' role)
A.	***Accounting*** for the available resources	Clear and publicly available knowledge of resource availability in time and space.	In many river basins/countries, adequate data/information on availability and use of water in surface and ground water (blue water) and water in soil and plants/crops (green water) is lacking. Few company representatives consulted during this study told of data/information on water they were sharing. Appropriate accounting principles and practices to value water and other natural assets and liabilities/risks are currently lacking.	It is the role of government to lead gathering of data/information on water resources to make it publicly available. For private companies to contribute to that, there will, in practice, need to be incentives to data-sharing provided by governments or international donors. Governments, private companies and investors should promote adoption of a common progressive international accountancy 'rule-book' reflecting water and other natural assets and liabilities/risks.
B.	***Bargaining*** through the political process to determine priorities and allocations	Policies governing water resources development, including assigning priorities among users for the available water.	As noted in Sections 4.14 and 4.19, most companies are underinvesting in building options to tackle increased resource scarcity in medium/long term climate and demographic futures. Some company representatives consulted talked about their company's engagement in water policy (Section 4.16), but there is some ambivalence as to the role of corporate water stewardship in water policy. The international standards and guides (AWS; CEO Water Mandate) caution against policy and regulatory capture – a risk of medium likelihood and severity (4.16). That risk is often greatest in basins with weak/dysfunctional institutional arrangements. As for NGOs' role in pushing for policy reform, 'curation' with coalitions of companies is an interesting model. In some other stewardship partnerships, the advocacy of NGOs is not currently visible.	It is the role of government to set out and oversee the political process that determines water policy priorities and allocation. That includes initiating policy and regulatory review and reform where necessary. As noted in Section 5.1, in developing (especially low-income) countries, that will require support from international donors (including foundations) to strengthen capacity. Companies' engagement in water policy, as part of corporate water stewardship – their role in 'Bargaining' as per Perry's framework in Table 1 - could benefit from a more open acknowledgement at the outset of the power-asymmetries between corporations and other actors (Sojamo, 2015). Where those asymmetries are very pronounced, mediators and facilitators will be needed to 'help in levelling the playing field', but ultimately the capacity and position of the weaker parties … to initiate and participate should be strengthened (Sojamo, 2015). That includes more capacity in government to avoid policy capture by corporates.
C.	***Codification*** of the agreed priorities and allocations into rules, statutes and laws	Translation of those policies into allocation rules and procedures such that the water service to each sector or user is clear under any hydrological circumstance.	As noted in Section 5.1, review and reform of rules and procedures governing allocation of water resources is a 'dynamic policy area' in OECD countries. In developing (especially low-income) countries, water laws/policies on paper are often patchily applied in practice, e.g. for lack of resources and capacity.	It is the role of governments to carry out 'Codification'. Representatives of special interests, including groups of companies (e.g. by sector/type of business), will wish to be consulted, but leadership should remain with government. Accountability of water stewardship initiatives needs to be ensured at two levels (Figure 7, Annex 4).

D.	***Delegation*** of implementation to appropriate institutions and agencies	Defined roles and responsibilities for provision of all aspects of the specified water services.	The international stewardship standards/guides are demanding as to the stakeholder-inclusive processes to be put in place in order to achieve social, economic and environmental objectives in the long-term, including for the public good. Currently, there is considerable ambivalence as to which roles/responsibilities are appropriate for 'Delegation' to private companies. In relation to the first three Steps of the WBCSD, WWF and AWS guides/standard, there is much emphasis on trust and relationship-building, but where is the attention to clear roles in collective action (Step 4)?	More attention needs to be paid to identifying the niche role(s) of for-profit companies (shareholder-owned companies, and other). 'Delegation' will be better served by recognition of what corporates are ready/able - and not ready/able - to contribute. A fundamental question arises as to how much commercial room companies have for which roles. A major constraint to corporate water stewardship is the downward pressure on food prices which makes it difficult for farmers and other businesses in the food supply chain to devote time and resources to good water and land management. As one international water specialist noted: 'Sustainability costs, and expects a premium, but this is not happening enough'.
E.	***Engineering*** to create the necessary infrastructure to deliver the agreed services	Infrastructure (built and natural) to deliver the specified service to each user.	Companies are making efforts to improve water efficiencies within their plants/premises, including water re-use (investment in their own infrastructure 'within the factory fence'). Companies are currently investing little in 'natural' infrastructure to complement built infrastructure (civil engineering *and* natural management) alongside investment to strengthen water governance.	The private sector has a niche role in terms of bringing technical expertise and technologies for innovation. Governments are responsible for leading planning for major water infrastructure beyond the factory fence (public goods).
F.	***Feedback*** (from monitoring & evaluation)	The process is continuous and to a degree circular.	As discussed in Section 4.4, while much promotional and marketing literature exists relating to 'water stewardship', there has been, to-date, a lack of independent evaluations and documented case studies. There are a lot of descriptions of projects, generally up-beat, but with little objective analysis.	Corporate case studies need to carry out M&E to transparently show the learning from water actions, with data against which to measure performance against indicators (intermediate and final), showing how corporate water actions are contributing to bigger picture water resources management.
↑ **- plus FINANCE for the above elements** ↑			As noted in Section 4.12, companies are investing in water efficiency with the factory fence and CSR projects beyond it (predominantly). They are not (with rare exceptions) investing in major (public) infrastructure for water resources management.	In answer to the question how far governments can devolve the risks and costs of water security to other parties, in the hope of lessening 'the cost to the public purse' (WWC/OECD, 2015, p.16 and 17), the answer is little. More government and international donor funding is needed.

To avoid charges of policy capture, companies can usefully align themselves with the 'curating' model (Section 3.7) where coalitions of companies support a platform for policy reform led by a 'curator' whose leadership they accept. Groups of companies acting pro-actively in this way makes more sense than CSR projects by individual companies. The first instinct of companies may be hesitation at ceding leadership to an NGO/civil society curator, but, if that is so, why are they ready to enter into partnerships with NGOs? The inference is presumably that the partnerships are more for brand and reputational purposes than collaborative contribution to effective water resources management. As one international commentator expressed it:-

> 'Just doing more stewardship is not enough. Stewardship initiatives need to lead to tangible outcomes. Already, water stewardship has become a major market in funds and logos. All development projects have to justify their existence and there is a danger of relationships between corporates and NGOs that are opaque – too close and sealed for there to be learning. Without progress shown – pretty soon – stewardship risks being discredited'.

As for 'Engineering' and 'Finance', companies' expenditure is focused on water efficiencies in their own plants/ premises. Investment on major water infrastructure beyond the factory fence will continue to be an important role for the public sector. Companies generally bring know-how, more than finance - except where private investment beyond the factory fence is afforded shelter under the umbrella of public guarantees.

In relation to 'Delegation', there seems to be, currently, a substantial disconnect between the efforts led by governments under Goal 6.5 of the SDGs (implementation of IWRM) and the water management and stewardship initiatives of private companies. Initiatives such as the International Water Stewardship Programme (IWaSP) and other water stewardship initiatives referred to in Section 3 of this paper constitute exceptions, for now.

A major gap, currently, is the lack of monitoring and evaluation of water stewardship initiatives. Corporate case studies need to carry out M&E to *transparently* demonstrate the learning from water actions, measuring performance against indicators to show how corporate water actions are contributing to bigger picture water resources management. It is currently difficult to make an assessment of that contribution due to lack of information.

The picture overall is one of lack of clarity, currently, as to roles - division of tasks. More attention needs to be paid to identifying the niche role(s) of for-profit companies (shareholder-owned companies, and other). Efforts to achieve more effective water resources management will be better served by recognition of what corporates are ready/able - and not ready/able - to contribute, as well as recognition of the functions that governments have to carry out. That is surely part of developing the 'constructive relationship with government and its agencies' referred to in the CEO Water Mandate's Integrity Principles for Water Stewardship Initiatives' (CEO Water Mandate and WIN, 2015, page 21). Where public sector leadership is currently lacking, the priority must be supporting greater capacity. There is no simple and easy way out of the public governance gap.

As regards the role of NGOs and donors, they are playing a key role in promoting water stewardship. They are working with sustainability staff within companies to push for more engagement in water management including piloting water stewardship initiatives with private companies. The involvement of private companies in corporate water stewardship presents to NGOs a substantial market in corporate funds for which they are competing. Reluctance or slowness by NGOs and civil society to collaborate runs counter to the aims of collective and cooperative action that is central to water stewardship. Hence, the observation noted that the NGO community is fragmented, with little alignment.

As compared with the debate in the 1990s relating to participation of international water companies in water services provision in developing countries, the discussion on corporate water management and stewardship and its role in water resources management has been less intense and certainly less vitriolic. The paradigm has shifted from (simply put) public *versus* private to configurations of public *and* private. Nevertheless, as discussed in Section 5.3, a key question is whether the aim of proposals for market allocation mechanisms is *stronger* government, or *smaller* government. In relation to water stewardship, that corresponds with, respectively, the option of government 'pick-up' of water stewardship initiatives, or alternatively the prospect of significant management decisions being removed from the political arena and debate.

As for the prospects for stewardship initiatives to produce wider benefits for society and the economy including poverty reduction, as well as the environment, despite expressed good intentions, it is not clear, at least from the evidence available to this study, that there is as yet a critical mass of companies engaging in water stewardship to achieve these goals. The development impacts of water stewardship should be a subject for future assessment.

As for the prospects for stewardship initiatives to produce wider benefits for society and the economy including poverty reduction, as well as the environment, despite expressed good intentions, it is not clear, at least from the evidence available to this study, that there is as yet a critical mass of companies engaging in water stewardship to achieve these goals.. The impression – to use a metaphor from mountaineering - is of a venture to climb the 'sustainability mountain' that is still at 'base camp'. There are significant opportunities to make progress because there are corporate 'hikers' who have experience, at least at lower altitudes, and who are looking up at the steep slopes of the water sustainability 'peak' and reflecting on how to take on the big challenge that it represents. There are also good manuals and guides available (AWS, WBCSD, WWF) as well as supporters of expeditions (brokers and donors) to help traverse the mountain rivers/glaciers, together with common acknowledgement of the risks and the need to tackle them through collaboration. And there are advances in technical equipment (e.g. for water re-use and recycling). Nevertheless, there are constraints and limitations on progress, including, currently, fragmented efforts by rival 'expeditions' in a crowded space, the tendency to bravado public statements and the generally weak connections to governments including implementation of integrated water resources management (where there have been previous failed 'summit attempts').

The question arises: which companies, and which governments and NGOs in support, will make the **big step** up from Steps 1-3 to Step 4 in the WBCSD, WWF and AWS scales, and when?

As noted above, business *concern* is not enough - the concern needs to be translated into *action*. The High Level Panel on Water has noted in its Action Plan that 'pressure on water is rising, and action is urgent'. The year 2017 will mark the 30th anniversary of the report of the Brundtland Commission on '*Our Common Future*', and, as Volans points out, this is a timely opportunity to critically reflect on what has worked - and what has not. Volans argues for 'exponential' (as compared with incremental) change and says:-

> 'Achieving exponential progress will require a scale of collective efforts rarely seen outside wartime conditions. We call on business leaders and the wider Sustainability Industry to embrace a breakthrough agenda … that … understands business as part of wider social and natural systems' and 'accepting that many current business models will become obsolete' (Volans, 2016, p.4).

6.3 Recommendations

Based on this study, what suggestions may be made to governments, corporates, investors, NGOs and donors?

6.3.1 Recommendations to governments

- **Connecting with water stewardship:**
  - Governments need to be alert to the opportunities to connect with water stewardship initiatives including those involving private companies. These initiatives are mobilising stakeholders, and may be useful mechanisms to support IWRM implementation and help to strengthen and expand regulatory compliance and development. Where the purpose of stewardship programmes is to catalyse government involvement rather than side-line it (Section 2.3), there will be openings for collaboration. These must, however, focus on impact rather than process alone.

  - In low-income countries especially, where there are few resources to support water user associations and other local water user groups as part of implementation of IWRM, the aim must particularly be for governments to connect with the efforts and energy generated by catchment-level water stewardship initiatives. These have the potential to become important catalysts for better water management, to better understand water in the economy, and to highlight where competition and climate change impacts require innovation in water management.

- **In implementing national IWRM plans:**
  - Governments can usefully look to pursue a gradual process of rolling out reform: e.g. starting with heavily abstracted basins and catchments, and in those critical areas gathering information on seasonal water availabilities (not aggregate annual).

  - Reforms should also build in flexibility, allowing space for local water users, in catchments, to negotiate/agree their own local rules which can then be endorsed by central government or river basin agencies as aligning with IWRM principles.

- Governments will be well advised not to allow emergence of a (new) cohort of senior water rights holders with a status above those of general rights holders, i.e. senior rights constituting property rights and thereby a major block to flexibility, as well as not representing a level playing field. As one representative of a public body said: 'When a government bans lower value water uses in a drought, it is not equitable – it is a poor response to a crisis. The general water rights holders tend to lose out to senior water rights holders. Seniority should not automatically make for priority'. Level playing fields also help to stabilise risk awareness and valuation of risks. Where this is not the case, senior water rights holders can increase risks for all, including themselves.

- Further, staff in government departments should not be swayed or intimidated by the individual lobbying of major water users[152]. There has to be a public debate, with disclosure of information on water rights claims.

- Governments should not allow the administrative part of the water abstraction licensing process to be disconnected from oversight by elected representatives, i.e. the 'long route of accountability' as shown in Annex 4 needs to be maintained (or constructed).

- Finally, under IWRM the goal of 'integration' itself refers of course to improved coordination and collaboration between government agencies with responsibility for, and interests in, water resources management. Overcoming fragmented management of water in institutional and administrative 'silos', with the mind-sets attached to that uncoordinated way of working, will be a key part of linking IWRM to water stewardship. Disparate data sets and silo institutions do not create a culture of integration and collaboration. Recognise that limitations in the public sector may hamper good private sector performance and inward investment.

6.3.2 Recommendations to private companies

- **Putting water efficiencies savings in context:**
  - While companies can usefully continue to improve water use efficiencies in their own plants/premises, the fact that a business is using less water per unit of production at a site does not say much until placed in the context of water availability and use in the area.

  - Interventions by companies and their suppliers (e.g. farmers) on individual plots/parcels of land – e.g. drip irrigation and other on-farm techniques for achieving water use efficiencies - need to be understood in terms of water within the catchment to see whether or not water 'savings' are real (as described in Section 4.5). As noted in Step 1 of the AWS standard, 'good water stewards' will understand their own water use and catchment context and that includes not promoting misleading claims about water 'savings'.

  - In other words, whilst intervening at a field scale in agricultural supply chains may well be an attractive option for businesses in the search for rapid outcomes, the impacts, intended and unintended, of actions to improve efficiencies of water use in agriculture need to be understood.

- **Agricultural supply chains:**
  - As noted in Section 6.1, *what* crops and agricultural outputs are grown/produced *where* is important. Major agricultural buyers should consider adjusting, over time, their procurement of agricultural products to align with water realities. That could mean switching procurement of water-thirsty agricultural commodities to growers located in areas where there is less pressure on water resources and/or a governance regime that is more effective in managing water challenges. Market signals emitted by major buyers (whether big retail chains or traders of agricultural commodities) are needed to move procurement towards more 'water-appropriate' products, based on natural comparative advantage (Section 3.9).

- **Less rhetoric, more reality:**
  - More independent evaluations and in-country studies are required, with fewer 'snap-shots' for just promotional and marketing purposes. If continued, the current gap between rhetoric and reality will discredit efforts to improve corporate water management and promote water stewardship. Simple, practical language helps to make water management and stewardship accessible, whereas extravagant and bold language (exaggerating individual companies' roles) causes confusion and blurs realities.

152 One commentator consulted during this study considered that 'some industries have the power to roll-over staff in regulators that are more junior '.

- The efforts to make stewardship work in practice are better served by recognition of what corporates are ready, and not ready, to contribute - a debate, in other words, that has its commercial and business (and legal) 'feet on the ground'. Table 2 in this section proposes who should lead which elements based on the Perry framework (Table 1).

- In heavily water-stressed catchments where there is intense competition between water uses in contexts of changing climatic and socio-economic conditions, companies need to be ready to discuss/negotiate and accept caps or reductions in water withdrawals, since in those circumstances trade-offs and compromises will often be necessary[153].

- **Arrangements for data-sharing:**
  - Companies are currently tending to keep know-how to themselves and contracting partners. They need to collaborate with government and other companies to jointly collect information on water availability especially in heavily abstracted basins and catchments (NB: in practice companies may well need incentives to do this).

- **Identifying targets:**
  - Companies are looking to set water management targets which can help leverage the required paradigm shift in business practice. The chosen metrics have to work with, rather than against, the realities on the ground including the complexities of hydrology in different catchments and river basins. These should be science-based, and communicable to all stakeholders, rather than (purely) corporate-designed and communicable within corporate structures only.

- **Change to accounting practice:**
  - An advisor to companies interviewed during this study summed up the views of many when she commented that companies are 'struggling' to put numbers on water risks to support the business case for action. Companies, individually and collectively, will not be able to assess and better manage their interactions with water resources until they have clear guidance on qualitative, quantitative and monetary valuation of natural capital impacts and dependencies.

  - Companies should, accordingly, support the efforts to translate pilot studies on valuation of natural capital into mainstream accounting practice - the applicability of natural capital accounting at different organisational levels (corporate, project, products, site) through the value chain. A common progressive international accountancy 'rule-book' would benefit all significant water-using business sectors across all geographies.

- **Connecting with IWRM:**
  - As a complement to governments' readiness (above) to collaborate with corporate water stewardship, companies and their partners in water stewardship initiatives should look to catalyse government involvement, rather than duplicate and by-pass public structures for water resources management. While hydrology and water management may be new to corporate representatives, in government water ministries and agencies there is an existing accumulation of expertise.

6.3.3 Recommendations to investors

- **Independent verification of sustainability reports:**
  Investors should push for independent verification of corporate sustainability reports as part of stock exchange rules, e.g. those established and enforced by the Securities and Exchange Commission (SEC) in the US and its equivalents in other financial centres. Alongside voluntary disclosure (such as that led by CDP), there is a case for establishment of systems for compulsory information access and verification.

- **Transitioning:**
  - If companies are to be able to transition to medium/long term climate and water futures, fund managers need to accord them companies space to develop new branches of their business and test new business models as well as explaining to investing clients/public the trade-offs between short-term returns and medium/long term sustainability (the trade-offs which will occur starkly where transitioning is not done).

153 Principle 11 of the OECD Principles of Water Governance (OECD, 2015a).

6.3.4 Recommendations to NGOs

- **Engaging with water stewardship and IWRM:**
  - In promoting corporate water stewardship, NGOs should not ignore government-led processes of IWRM. The NGOs engaging with corporates need also to engage with public policy. One NGO leader commented on the need for civil society organisations not to be afraid to enter into 'dialogue with power'. That includes engaging with the power of elected leaders and government policy-makers, as well as corporate leaders. As discussed in Section 6.1, both government-led IWRM and corporate water stewardship seem to be advancing slowly, and are in need of 'catalysing'.

- **Positioning of NGOs:**
  - As discussed in Section 3.7, it is important that proposals for water reform are not captured by business agendas. A stewardship leader for an international NGO noted that the role of NGOs is not as consultants to business, but as advocates of an independent agenda.

  - The 'curation' model as tested by a US non-profit (discussed in Section 3.7) is an interesting example of how to do that. In leading 'a non-profit coalition' of c.25 companies in articulating an agenda for reform of water resources management, it 'leads presentation of proposals for reform to legislators and policy-makers with companies providing letters of support. The companies have a say in formulation of the proposals, without control. They show their awareness and concern for the water management issues in question, without the reform agenda being set by them – and without them taking the risk of assuming a public profile as single/sole advocates. Thereby, the non-profit leader sets -'curates' - the policy agenda with which the companies can choose to associate themselves, or not. The coalition is not a membership organisation and companies do sometimes drop out, depending on the decisions of their leadership.

  - NGOs will presumably be looking to push for evolution of corporate culture and companies' business practices. There is a danger of too many NGO and corporate partnerships that are supported by funding from philanthropic foundations, while there are too few that mobilise funds out of core business budgets. The due diligence processes established by NGOs to manage their interactions with corporates can usefully encapsulate this distinction.

  - In some NGO partnerships with corporates the advocacy agenda of the NGO is not visible. Measurement of the status of water stewardship activities against indicators is needed, with transparent reporting of progress. An alternative approach is a campaign with a scoring system like that used by Oxfam in the 'Behind the Brands' initiative (referred to in Section 2.1). Although the tendency of companies is to retract from anything they fear could benchmark them - stand-alone results without common baselines and basin relevant information remains in a contextual vacuum and therefore loses impact.

  - NGOs should look to include small and medium enterprises in such processes, alongside large corporations as much as possible.

6.3.5 Recommendations to donors

- **Catalytic role:**
  - The catalytic model proposed by the International Water Stewardship Programme (IWaSP) and other water stewardship initiatives offers, currently, the best prospect of connecting water stewardship with continued efforts to improve water resources management systems. According to that model, the companies and other actors who take part in water stewardship initiatives seek to encourage the government to 'pick up and run' with the activities that are created (as opposed to avoiding a link to government processes).

  - An underlying rationale for promotion of stewardship is, in other words, as a complement to efforts to implement IWRM under SDG Goal 6, so that governments accord greater priority for water resources management in their policies and budgets.

  - For those policies to be implemented adequately, government budgets for water resources governance in low-income countries will generally need to be supplemented by donor funds. That donor support will be an important complement to donor funding of water stewardship initiatives.

- The water stewardship initiatives supported by donors (e.g. BMZ[154] and DFID) offer the opportunity to test the stewardship 'broker' and promoter role - to understand better and refine the 'rules of the water stewardship game'. But impacts need to be seen soon across the spectrum of improved water management, poverty reduction, and governance improvements to the extent possible.

- **Independent evaluations:**
  - In supporting such water stewardship projects, donors need to set an example in commissioning independent evaluations of the water stewardship initiatives that they are supporting including incentivising companies to carry out monitoring and evaluation. Without good information to monitor progress, donors and other actors cannot know what is working and what is not – and water stewardship will be undermined instead of strengthened.

- **Indicators of success:**
  - There is a need for donors and NGOs to devise intermediate indicators of success, which track outputs and outcomes for a range of beneficiaries of water stewardship initiatives in the short/medium term, as well as setting long-term objectives. An M&E protocol could usefully be agreed to provide a common platform[155] for observing how water stewardship initiatives are progressing.

- **Finance:**
  - The role of donors and international financial institutions (IFIs) in contributing funding for major water infrastructure in developing countries is key, as underlined by the 2015 WWC/OECD report on 'Water: Fit to Finance?'. The authors note that the financial contribution by private companies to catchment water resource management beyond the factory fence is, and is likely to remain, small compared with the needs for major water infrastructure, both hard (dams and other built storage facilities), natural (water-related ecosystem services affected by and also supporting hard solutions) and 'soft' (institutions to manage demand).

  - With that, the WWC/OECD panel answers the question as to how far governments can devolve the risks and costs of water security to other parties, in the hope of lessening the cost to the public purse. The answer, it seems, is little. Households - and businesses - may have to assume 'the first risks of water shortage by investing in their own storage and supplementary supply sources', and farmers will commonly have to contribute to the cost of irrigation schemes, but major works will be primarily down to government agencies or other public sources of finance. It is the 'strategic purpose' of providing public goods – 'drought resistance, flood control, river basin management, maintaining 'ecological' river flows' regional development' – that justify a large element of public funding' (WWC/OECD, 2015, p.23).

  - Donors and IFIs should heed the conclusion of the WWC/OECD report: '…Schemes [to involve commercial/ private finance] usually pivot on public backing in one form of other. While 'many governments have reduced their budgets for public infrastructure due to fiscal pressures and have pinned their hopes on private finance to fill the resulting gap…, private money can rarely fully substitute for public finance in major water infrastructure – it can only be a junior partner in most cases, and even then will need comforts of various kinds' (e.g. guarantees from government/public bodies)' (WWC/OECD 2015, page 58).

6.3.6 Recommendations for further research

- **Outcomes of water stewardship:**
  As a consequence of water stewardship, have corporates seen a real business impact, in revenue, brand value, market share? And what are the broader development benefits/outcomes of water stewardship initiatives?

- **Role of SMEs:**
  As noted in Section 1.1, the authors of this study talked principally to representatives of large companies. Further research into the role in water stewardship of small and medium enterprises (categories (ii) and (iii) in Box 1. in Section 1.3) would be useful.

154 German Federal Ministry for Economic Cooperation and Development.

155 The case for a set of 'meaningful, context-based, science-driven targets' for corporate water management, aligned with the private sector, has been persuasively argued by CDP, the CEO Water Mandate, TNC, the World Resources Institute and WWF in a draft paper presented to 2016 World Water Week in Stockholm.

- **Role of farmers:**
  The important role of farmers as water managers and potentially as water stewards has been highlighted in Section 4.6. It is an area which merits further research, including studies of how corporates are engaging with farmers.

- **Irrigation Efficiency:**
  The need to better understand and communicate modern irrigation approaches and where water reductions occur, and what and who benefits from those. What this means in relation to wider water resource management at the basin level, and the SDG target requires further research and understanding. How the private sector contributes to achieving water efficiency, supports food security, and supports other SDG goals concerned with ecosystem protection requires further research.

- **Indicators:**
  Research on indicators and linking development indicators (including relating to the SDGs) with corporate key performance indicators would be useful.

- **Role of Research:**
  The role of research itself needs to be better understood in relation to providing objective reflection on the impact of corporate engagement in water resource management. Rather than privately funded research programmes benefiting just corporations, closer links should be established between the research community and companies to better identify solutions to real-world economic and water management challenges.

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Annex 1: Questions presented to the persons interviewed

The following were the questions sent in most cases to persons consulted during this study prior to the interview:-

1. The business case
- What is/are the (core) business motivation(s) of private (for-profit) companies in engaging in (a) water management and (b) water 'stewardship'?

2. The financial case
- How are water management/stewardship initiatives associating themselves with incentives *for investment* in water resources management (WRM)?

i.e. what resources (financial/physical/human) are being generated for enhanced WRM in developing countries as a result of the water management and stewardship initiatives?

3. The public good
- What are the prospects for 'water stewardship' initiatives producing wider benefits for local communities and the environment?

- How is it envisaged that the public sector will play a role in these water stewardship initiatives?

There were variations in some cases. For example, this question was also posed to some persons consulted:-

4. Role of NGOs and donors
- What do you see as the role of NGOs in relation to corporate water management and 'stewardship'?

- What do you see as the role of donors/development partners in relation to corporate water management and 'stewardship'?

As noted in Section 1.6, the interviews were semi-structured and informal to allow the representatives of companies and other actors to say what they wanted. The interviews did not necessarily follow the above order of questions and not all questions were covered in all cases.

This was not, in other words a questionnaire - far from it - and people responded to the headline questions as they wished. In the perspectives expressed and insights provided, there was considerable diversity.

Annex 2: IUCN and Business Engagement

Created in 2012, the IUCN Business Engagement Strategy aims to encourage transformational change at the company, sectoral and cross-sectoral levels in regard to how biodiversity is valued and managed by businesses. Its main objective is to generate benefits for biodiversity and natural resource-dependent livelihoods at a landscape (and seascape) levels. IUCN's engagement with business reflects its global priorities, set by its Members at the IUCN World Conservation Congress. The current programme builds upon the organisation's niche as the world's authority on biodiversity conservation, nature-based solutions and related environmental governance.

Relevant resolutions of the IUCN World Conservation Congress are set out in **Box 14**. Held once every four years, the Congress brings together more than 1,300 Member organisations from government, civil society, indigenous peoples, business, and academia, to discuss and guide IUCN's work plan for the four years to follow. The goal is conservation of the environment and harnessing of solutions to global challenges, including water management challenges.

Box 14. Relevant resolutions of the IUCN World Conservation Congress

Bangkok, Thailand, 17-25 November 2004

3.061: IUCN's interaction with the private sector

'Recommends that priority be given to cooperation with the private sector in areas which address the root causes of biodiversity loss…'

Jeju, Republic of Korea, 6-15 September 2012

WCC-2012-Res-108-EN: the green economy and corporate social and environmental responsibility

'Urges governments to incentivize business though regulation and wider policy tools to minimize their ecological impact, but also to encourage business to engage in credible CSER in order to avoid 'green-washing'…..'

'Urges governments to design the necessary institutional and legal mechanisms to allow economic activities to adequately internalise environmental costs….'

WCC-2012-Red-109-EN: green growth as a sustainable strategy for nature conservation and economic development

'positively considers green growth in implementing values and conservation of natural resources worldwide…

'support green growth, which seeks to provide economic opportunities through the conservation and sustainable utilization of natural resources while assuring sustainable economic development'.

Annex 3: Steps to better water stewardship - WWF

The full text of the steps outlined in Figure 2 that corporates can take to water stewardship according to WWF is as follows:-

1. **Water awareness** – Gaining water awareness – in terms of how water impacts business and how business impacts water – is an on-going and iterative step for all companies. A key facet of awareness is internal engagement. From the CEO to plant managers and suppliers and employees, building awareness can help companies 'sell' the water story and trigger action where it matters. Water awareness can also highlight how a company is perceived by others, including basin stakeholders, the press and consumers, which in turn influences the degree of risk that a particular company faces. External debates and their sector-specific implications will inform a company's understanding of water and its associated risks, and will influence strategy and interventions. At its most basic, water awareness must include a high level understanding of the global water challenges, the dependence a company has on freshwater and their exposure to water-related risks.

2. **Knowledge of impact** – Impact refers to the wider understanding of where a company's 'footprint' is actually located in terms of direct (company operations) and indirect (supply chain) water dependencies. This generally includes measuring elements of water use (preferably through the WFN water footprint methodology), as well as an estimation of 'impact' on water resources. In this step, many companies begin to look beyond the fence line of their operations to understand the wider context of their water use, including global debates, peer examples and relevant watershed issues. Hot-spot and risk analysis can enhance understanding of these impacts. These assessments should include the context of the basin, as well as identification of high risk caused by water quantity and/or quality issues.

3. **Internal action** – Internal action implies that some element of learning and prioritization has occurred and a strategy (of some sort) is in place. For most companies, this is the more comfortable first step of getting one's own house in order by outlining goals, targets, actions and plans that will help tackle the more immediate solutions to the problem, i.e. the low-hanging fruit. Internal action tends to incorporate the following crucial activities: company targets to reduce baseline water use; launch of water efficiency pilot projects; engagement with employees, consumers and marketing to address opportunities and risks; improvement of water quantity and quality reporting; and pollution prevention.

This is also the step where companies begin engaging their suppliers and assess how to take action to realize supply chain improvements through alternative sourcing, product innovation or improved management of water in the production of raw materials.

4. **Collective action** – In this step, a company recognises that working with others and at various scales (global fora to local water groups) is a necessary part of a robust water stewardship strategy. Collective action where company water use and associated risk is high can help mitigate basin-related risks, boost reputation on water issues, and build brand trust and loyalty. Stakeholders can be anyone from other users in a particular watershed, to other companies, NGOs, sector initiatives, public agencies and standard setting bodies.

Collective action can take the form of participation in public fora to address water management issues, support for freshwater conservation projects in watersheds of importance to company operations, partnerships with watershed groups, NGOs or other companies that pool technical, human and financial resources to conserve freshwater resources, and participation in collective actions to improve water management.

5. **Influence governance** – Depending on the sector and their exposure to risk, this step can be one of the trickiest for companies. It is also where engagement can bring about higher risk (perhaps for shorter periods), but is nonetheless a course of action that requires careful planning and thought. The motivation for engagement usually stems from circumstances of direct impact to a company and will often consist of advocacy, influencing or lobbying, partnership, financial support, facilitation, institutional strengthening, etc. It may take place at the local, watershed, state or national level. In some places, companies may choose to use this strategy if risk is high or the imperative for better management from public authorities is seen as a future risk. Most engagement activity will depend on the sector and its ability to influence, whether or not they are a strategic partner of government (energy, water provision) or if they are a manufacturer of goods. The opportunities through engagement can mean a significant reduction of risk, including social and legal license to operate, and clearer and consistent laws and regulations that govern company water use.

Source: WWF International[156]

156 http://wwf.panda.org/what_we_do/how_we_work/our_global_goals/water/water_management/stewardship_steps/

Annex 4: A framework for analysing accountability in water stewardship initiatives

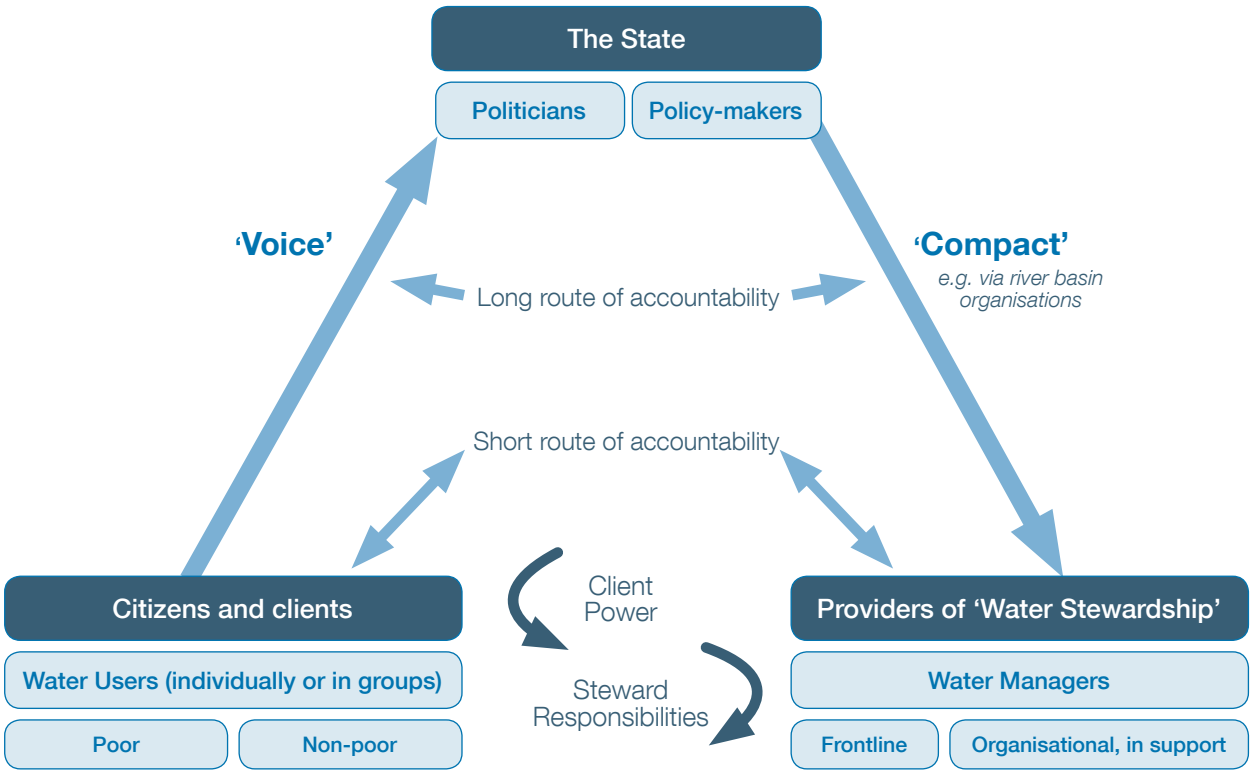
Figure 7 sets out a framework for analysing the accountability of participants in, including leaders of, water stewardship initiatives. The figure is adapted from the framework for accountability in relation to water, sanitation and other services in the World Development Report 2004. The framework was originally conceived for application to health and education providers and water utilities, but is here adapted to apply to water stewardship services. Adapted to this present context, this framework gives useful insights.

The World Development Report 2004 was particularly concerned with 'services' and how to 'make services work for poor people'. The stewardship 'services' that stewardship initiatives aim to provide to water users are illustrated by the following steps in the AWS code:-

- the opportunity to engage with 'stewards' (as well as acting as stewards themselves) in collective actions (Step 4.15 of the AWS standard) as part of catchment water strategies (Step 3.23);
- notification of any concerns regarding shared water problems (Step 4.8);
- reallocation of water saved for social and environmental needs (Step 4.14);
- the benefit from improvements to water quality in the catchment as a result of actions by a [steward at its] site (Step 4.3).

Like the framework in the WDR, Figure 7 refers to both 'non-poor' and 'poor' water users.

Figure 7. Accountability of water stewardship initiatives



Adapted from the World Development Report 2004

The assessment of accountability of water stewardship initiatives, like water supply services, needs to be at two levels.

Water users, including those who are poor, may, first, seek to hold water stewardship initiatives – collective actions including multi-stakeholder fora – accountable by the direct '**short route of accountability**' – namely via the 'Client Power'-'Steward Responsibility' relationship at the catchment level, as shown in Figure 7. The degree of accountability of that 'lower floor' will depend on how the water stewardship initiative is set up and managed, for example the degree to which stakeholders in the catchment are included. The CEO Water Mandate's integrity principles refer to two examples of lack of inclusivity as follows:-

'Communities directly affected by a water stewardship initiative are not identified or engaged because they are perceived as low priority' and 'Water stewardship meetings are conducted in a language[157] that few participants understand well'.

When the short route of accountability is not working because of a lack of inclusivity or another failure of accountability at that level, water users need to be able to have recourse to the second route of accountability – a longer, and potentially more difficult route, but nevertheless an alternative option that is important. They will look to use their 'voice' as citizens to hold institutions (officials of government), for example river basin organisations, and politicians (elected leaders) to account, as best as they can. The politicians and policy-makers can in turn use the 'Compact' – as seen in Figure 7 - to do the same with the stewardship providers. The combination of the two constitutes the '**long route of accountability**'.

The degree of long-route accountability will depend on many contextual factors including the extent to which in any particular country citizens do have a voice and the existence or otherwise of a clear compact to the organisational/ front-line providers in the first place.

The WDR 2004 describes the 'compact' as 'not usually a specific and enforceable contract, but rather a 'connection' between State and service provider where the State acknowledges and accepts the role of the provider and preferably supports it/enables it'. In this stewardship context, that acknowledgement may be, as noted above, via the river basin organisation, where it exists, or, if not, by a district/local authority. The AWS standard requires compliance with legal and regulatory requirements (Steps 2.3 and 3.2) and stewards will, therefore, be looking as a minimum to have acknowledgement from the relevant public body for the stewardship initiative to go ahead, and the approval may be given in the form of positive support to the stewards' efforts. Where there is a delegation, explicit or tacit, from a river basin authority, a corresponding responsibility will then be owed by the stewardship service provider to the State to deliver the stewardship services in question.

The focus of attention of the water stewardship integrity principles is the short route of accountability, but with some references to the type of issues which are 'long route'[158].

As for the 'long route of accountability', questions arise as to the nature of the 'compact' - the long-term relationship of accountability, between politicians/policy-makers on behalf of the State on the one hand and the 'providers' of stewardship services on the other (whether 'organisational' or 'front-line' providers as per Figure 7). What is the basis of accountability on which to found responsibility for stewardship outcomes? Where and how is the water user 'voice' to be exercised? Where/how does the water user exercise 'power' to leverage/require performance of the stewardship services listed in the standard?

While designs of decision-making processes vary, instinctively people can perceive what constitutes a closed process. Gaventa (2003) provides a useful classification of different 'spaces for participation': 'closed spaces' (behind closed doors); 'invited spaces', where participation is encouraged; and 'created' or 'claimed spaces' – created/claimed by less powerful individuals.

157 Including technical language with use of terminology with which stakeholders may not be familiar.

158 For example, as per the integrity principles: 'Where water stewardship initiatives engage in policy advocacy, convening, and debate, the resulting representation, knowledge, or power imbalances may send advocacy messages that advance the interests of certain private parties over public interest'.

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