

organization that promotes sustainable food and farming, and with Molson Coors UK, a brewing company. Processing companies often set water efficiency targets. Molson Coors UK have specifically set a challenging goal of improving water efficiency by 20% by 2020. Together, ASDA, LEAF and Molson Coors UK, produced easy-to-use guidance for farmers on water saving techniques¹³. Finally, at ASDA we have also trialled rainwater harvesting at our depots in Avonmouth, Bristol and Rochdale, and upgraded the filters to reuse more water for washing trays; these two plans combined will reduce our own water consumption by 50%⁷.

Working together

Initiatives that address water availability and access across supply chains are key to sustainability efforts and can reduce the risks to our business. It is vital to engage with the various stakeholders on the ground, such as agribusiness, small scale farmers and local governments, all of which have a vested interest in water, to generate and implement the most appropriate and effective solution.

Engaging with all facets and users of water will alleviate pressures and the risks from dependencies, even more so under the impacts of climate change, but it requires initial investment. The question is who should make that investment and what will the returns be? The financial burden might need to be shared among many stakeholders in a region, all of whom are feeling the impacts on water and have incentives to implement solutions. Retailers like ASDA

would consider financial investments if the benefits are clearly identified and achievable. The latter conditions will depend on a combination of initiatives, including adequate research, collaborations and possibly even long-term retailer–farmer relationships. A water-related investment could potentially shield retailers from water-induced market fluctuations and protect against price hikes or from having to source too often from more expensive options, for example overseas. It will also reduce the need to over-contract, which is currently required to ensure that the quantity of produce demanded by our customers is delivered even when there is poor weather; this adds to the transaction cost of the produce. By supporting growers in better water management, as we did in Spain for example, retailers could also potentially enhance retailer–farmer relationships.

Although we have a menu of solutions to choose from, we lack the coordinated response and innovative financial mechanisms that would scale up implementation of those solutions. Moreover, we should address the long-term implications of water impacts while dealing with the short-term behaviour of investors and businesses.

Businesses have been incredibly successful and innovative in coping with water deficits through contingency planning, but in today's world threatened by a weaker water cycle under climate change and a growing population, is this sufficient? We need to work collectively to find solutions as this would not only generate multiple benefits

at lower individual costs, but would also define saving water as best practice and provide strategic opportunities to address climate change impacts on water. Given the large number of water users, the growing demand for water resources, the variety of stakeholders involved and the increasing intensity of climate change impacts, collective action and shared solutions are needed to alleviate the pressure on the environment, business and communities. □

Paul Kelly is at ASDA, ASDA House, Southbank, Great Wilson Street, Leeds

LS11 5AD, UK

**e-mail: p6kelly@asda.co.uk*

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COMMENTARY:

Making sustainable beer

Andy Wales

As global population continues to grow, managing the relationships between water, food and energy is becoming increasingly critical. Businesses need to react to the challenge and be mindful of the important role they play in implementing solutions.

Water and food security are highly intertwined issues and they ultimately depend on the sustainable use of natural resources. Looking ahead, sustainability is a big challenge as the population continues to grow; as does the demand for better living standards. Added to the equation,

climate change is enhancing business and societal risks through its impacts on natural resources and the costs of emissions mitigation targets. Both effects call for integrated adaptation and mitigation solutions — such as better water management and lower energy use — along the supply chains of products. In our

brewing business, we depend on natural resources and, as we use them to produce our beer, we inevitably impact on them. Because we operate across continents, our climate-related and resource-related risks are huge. Therefore, we need to better understand where and why risks increase and what to do to address them. There is

no single or simple silver bullet solution. Rather, it is paramount that we start embracing complexity by recognizing the food–water–energy nexus so that we can better manage resources to meet equitable economic and social development. This line of thinking offers solutions that are rooted in the multiple challenges emerging at the local level.

Water as a business priority

In the context of water security, business has a responsibility to engage with other stakeholders to explore solutions, if not opportunities, for improved water management. For us at SABMiller, water is vital not only for the brewing process but also for growing the crops used to make beer and for generating electricity to power our breweries. We must therefore simultaneously tackle direct water usage in our operations as well as the water needs of agricultural and energy systems. In addition, a more sustainable agricultural system is one that also adapts to the impacts of climate change, including water scarcity. Adaptation means improved cultivation practices and resource efficiency — which can be achieved through water management. Water plays a fundamental role at various stages in our supply chain and therefore water scarcity poses significant risks to our business, as well as to some of the communities in which we operate. We aim to work collaboratively with local communities to protect the watersheds that we share, as we all depend on them. According to the United Nations, more than three billion people will be living in water-scarce areas by 2025. This figure includes a significant proportion of our customers, employees and communities. For this reason, we have developed a holistic, whole value chain approach to ensure these stakeholders are included in our business strategy.

On its own, increased efficiency in the use of natural resources within our operations will not be enough to ensure that they are available over time. We need to go beyond efficiency measures if we want to meet our target of using just 3.5 litres of water to make 1 litre of beer by 2015, which will represent a 25% improvement with respect to 2008 water usage levels. The average efficiency of breweries varies by country and by brewery; our Water Futures report gives examples from across the globe³. We are relying on our understanding of risk, our global scale and our existing relationships with stakeholders (particularly governments and NGOs) to mobilize partnerships. This is the only way to improve our understanding of the shared



The SABMiller barley project in India.

water challenges we face, helping us to make better management decisions and facilitating knowledge sharing.

Addressing the challenge

Water availability and climate change are incredibly complex issues, with impacts on our natural assets at both the local and the global level. Those impacts affect our business operations as well as the well-being of communities in affected areas. One way to address this complexity is to define and include natural capital as an additional constraint in the decision making process of businesses. Natural capital is an economic metaphor for our planet's limited stocks of physical and biological resources, and the limited capacity of ecosystems to make direct and indirect contributions to human well-being.

Business leaders recognize that our societies are increasingly living beyond the boundaries of our natural capital stock — for example, by overexploiting water resources. Companies urgently need a deeper understanding of the unpriced impacts associated with the production of goods and services (externalities) on people and the environment, such as the over-abstraction of water. By understanding externalities and considering them in the assessments of business risk and opportunities as part of their decision-making process, companies can take bold steps towards thoughtful business development that looks at impacts beyond the purely commercial dimension. The

valuation of externalities in monetary terms aims at making them visible and part of the decision-making process of companies. It reveals the hidden costs associated with environmental impacts and can help businesses make better-informed decisions on the use of natural resources.

Farming malting barley in Rajasthan

Working closely with the Natural Capital Leaders Platform (an initiative at the University of Cambridge that convenes companies wishing to better understand and manage their impacts and dependencies on natural capital; www.cpsl.cam.ac.uk/natcap) and academics co-funded by the Valuing Nature Network (an interdisciplinary network for valuing biodiversity, ecosystem services and the use of natural resources), SABMiller used a bottom-up approach to value environmental externalities associated with its procurement of malting barley in Rajasthan, India¹. The analysis began as an exploratory desk-study using company experts as well as publically available data about the biophysical and socio-economic aspects of farming in Rajasthan. Prior to the company's start in Rajasthan, very little malting barley was grown, but the company did not want to import all of its raw material from abroad and preferred to build a local supply chain. Therefore, SABMiller India decided to establish a farm extension service — providing local small-scale farmers with in-field advice on how to grow malting barley and offering them an attractive price. While all of these farmers

are independent and barley is only one of their crops, we at SABMiller sought to gain a better understanding of the socio-economic and environmental effects of engaging with the farmers, mainly because of the increasing concerns about water scarcity in the region. Under different scenarios, the study assessed trends in agriculture in Rajasthan over the last 10 years and found that production was characterized by increasing fertilizer and fossil fuel use (the latter used to produce energy), and limited water-use reductions. Comparing the performance of barley farmers with these trends, the study showed that SABMiller's programme helped participating farmers to increase yield by 55%, produce a better quality barley, increase their income by US\$1 per day by following the best agronomic advice for malting barley, achieve a fourfold reduction of irrigation water use and reduce their carbon emissions by 16%.

For the 6,000 participating farmers in Rajasthan, the annual reduction of water use and CO₂ emissions amounted to 3.4 million m³ and 1,980 tonnes of CO₂ equivalent, respectively. The total monetary value of these normally unpriced effects was estimated at US\$300,000 per year. This means that without the programme, barley production would have had an additional annual (hidden) cost of US\$300,000 — representing the cost of depleting water resources and contributing to climate change. Despite these water and carbon benefits, the study highlighted two areas for potential

improvement. First, even larger reductions in water use are needed. The aquifer in the area suffers from unsustainable extractions for agricultural activities. Barley is just part of the picture and wider systemic changes to the entire agricultural system are needed to address the rapid fall in groundwater resources. Second, wider support is required for growers to improve their farming practices. Farmers could achieve an increase in their income by US\$2 per day if they systematically received best-practice agronomic advice for all current crops, not just barley.

Resource interconnectivity

The lessons we at SABMiller have learned from this valuation study of malting barley is that inter-connections between resources are critical and issues such as water scarcity and food and energy security cannot be addressed in silos. We need to find better ways to address the physical impacts of climate change and handle the relationships and trade-offs between water, food and energy. Furthermore, these challenges are compounded by the societal impacts of the local political economy of water. Therefore, we are now trying to make our own business decisions through the lens of the resources nexus. In doing so, we are working to expand our global network of local partnerships to foster sustainable solutions².

Wasteful resource use impacts on natural capital and can undermine long-term

economic and social stability, exacerbating risks for businesses. We share the risks related to these resources with local communities and other stakeholders, such as governments and NGOs. This means that collective understanding and collective action are crucial. In India, water scarcity is a major issue and we are determined to collaborate with all those affected to understand and tackle the problem to benefit local communities and ecosystems, as well as our business. Effective resource management can also generate opportunities for businesses and other stakeholders to counteract the impacts of climate change.

Assessing and pricing externalities is not an easy task, nor is it an established business practice, but we at SABMiller believe it is a valuable tool for supporting better resource management. Increased use of externality valuation represents an important step in the journey towards factoring natural capital into business decisions. □

*Andy Wales is Senior Vice-president of Sustainable Development at SABMiller, SABMiller House, Church St West, Woking GU21 6HS, UK
e-mail: Andy.Wales@sabmiller.com

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COMMENTARY:

Water scarcity challenges to business

Arjen Y. Hoekstra

The growing scarcity of freshwater due to rising water demands and a changing climate is increasingly seen as a major risk for the global economy. Consumer awareness, private sector initiatives, governmental regulation and targeted investments are urgently needed to move towards sustainable water use.

Recently, the World Economic Forum listed water scarcity as one of the three global systemic risks of highest concern, an assessment based on a broad global survey on risk perception among representatives from business, academia, civil society, governments and international organizations¹. Freshwater scarcity manifests itself in the

form of declining groundwater tables, reduced river flows, shrinking lakes and heavily polluted waters, but also in the increasing costs of supply and treatment, intermittent supplies and conflicts over water. Future water scarcity will grow as a result of various drivers: population and economic growth; increased demands for animal products and

biofuels; and climate change². Water-use efficiency improvements may slow down the growth in water demand but, particularly in irrigated agriculture, such improvements will most likely be offset by increased production. Similarly, water storage and transfer infrastructure improve availability, but allow further growth in demand as well. Climate