

COMMENTARY:

What to do when we run out of water

Paul Kelly

Climate change, alongside numerous other pressures, is having unprecedented effects on water resources both globally and locally. Retailers need to implement a range of adaptation measures to ensure the sustainability of supply chains.

The established tendency to see water everywhere as an endless resource is being increasingly challenged in many parts of the world, including here in the UK. For too long, water has been taken for granted and UK businesses rarely debate the consequences of water mismanagement at the regional and national levels. Climate change is having impacts not only on the hydrological cycle, resulting in increased droughts and floods¹, but also on vital water resources and ecosystem services², such as the ability to regulate water quality through sedimentation³. These pressures imply that now, more than ever, we are threatened by significant weather-related

water stress and risks. Consider for example the dire droughts in the Brazilian coffee belt, in Australia, Singapore and Malaysia and more recently California, as well as the intense floods we have recently had here at home. For businesses, the risk of these events means reduced resilience of supply chains and potential losses from commodity price hikes that follow sudden drops in agricultural production. An example is the 2012 drought in the US that led to the lowest maize annual yield since 2006, with widely discussed potential consequences on global food prices⁴.

We at ASDA, just like other businesses, have to cope with the risks of more

pronounced seasonal weather fluctuations. In fact, our recent study (to be published this year), in line with IPCC guidelines, has shown that only 5% of our fresh produce supply chain is not at risk from future impacts of climate change. There are tangible business incentives to urgently respond to these risks and guarantee the long-term ability of the food chain to meet market demand.

Addressing water risks

Maintaining global food security, feeding growing populations and satisfying the demand of water-intensive diets are all tasks that will require significantly more water for agriculture and food production activities in coming years⁵. The ability to meet this demand is at risk as water is increasingly under threat from climate change and population growth. From being handled as an essential natural resource, water has now become an economically strategic one. In fact, water availability is one of businesses' top-five environmental risks⁶.

Retailers are the core channel for the sale of agricultural products and they therefore depend on agricultural production. They can only thrive as businesses if they appropriately manage the dependencies of their supply chains on water sources. Food retailers are the major buyers of agricultural products, the yields and quality of which are directly affected by water availability. At ASDA, we are becoming increasingly aware that water presents a number of physical, political and social opportunities as well as barriers to food access. Of all the environmental impacts we are responsible for, 80% lie within our supply chain, and analyses of product life cycles and supply chains have clearly highlighted the fundamental value of water, both as a global good and as a core local natural capital resource⁷.

There is a need to improve the understanding of water impacts and



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From the sky. Overview of an irrigated field in La Mancha, Spain. Details of the soil pattern related to an old drainage system are visible. Soil properties differ strongly within the irrigated pivot. The survey of the soil differences is an important task for managing the irrigation schedule.

dependencies at local levels, where the impacts of water scarcity or water abundance are directly felt. We also urgently need metrics to develop robust assessments that account for water's temporal and spatial dimensions, such that we can respond and manage our supply chain risks accordingly. We have recently been investigating our choice of cropping given the changing weather and climatic patterns, and we are also assessing how better water management may alleviate the pressures of climate change.

Water and the consumers

In 2011, we recruited a panel of 7,500 ASDA customers — 'Everyday Experts' — with the aim of gathering primary information on customers' thoughts about sustainability; we have now reached 20,000 respondents. The surveys revealed that the vast majority of ASDA customers, regardless of their income, age or gender, care about sustainability and about where their food originates⁸. In February 2014, 9,500 responded and 72% had actively investigated where their food had come from. Therefore, we came to the conclusion that adequate water management in our business is not just important to enhance the resilience of supply chains but it is also fundamental to maintain our reputation as a sustainable business in the market. Businesses face the challenge of addressing these concerns and need to deal with the growing pressures on water but more generally on the planet's natural capital.

The water-retailer relationship

The quantity and quality of crop yields rely on a number of conditions including water access, soil fertility, adequate climate, seeds access, land availability and healthy terrestrial fauna and flora. Regarding water access, the production of agricultural commodities along the food supply chain depends on the local availability of water through precipitation or irrigation. When water becomes scarcer locally, it has knock-on consequences on the retail industry. Therefore, it is in food retailers' best interests to invest in adequate water stewardship to ensure the sustainability of product supply chains.

At ASDA, we are examining our role in water stewardship around the world and throughout our supply chains. This serves to pinpoint not only the physical factors that define water access but also the social and economic implications of water availability. Production systems such as monocultures that cultivate crops (for example, palm oil and sugar cane) for global distribution may benefit local communities with employment and funding opportunities, but are often reliant on over-exploited water resources. Such systems therefore need



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To the soil. Detail of a sensor (Decagon Em50G) for soil moisture installed for the control of irrigation water. Both remote sensing and soil-related techniques are essential for competitive crop management.

to be reconsidered and restructured. As an example, a 2013 study has shown that farmers' poor land-management practices in the case of maize production in the UK has led to increased surface water runoff⁹ that apparently contributed to the severity of the recent flooding in the UK, as recently reported in the news¹⁰. Indeed, the study⁹ shows that three-quarters of the maize fields in the southwest of the UK have contributed to flooding. However, helping to reform land-use and water-use systems is a difficult task for retailers such as ASDA, which has supply chains extending beyond the UK and therefore comprising large amounts of virtual water — the hidden flow of water due to food or other commodities being traded from one place to another¹¹. Acknowledging the impacts and dependencies of products sourced from overseas, whether from water-scarce or water-rich areas, is of the utmost importance in today's globalized systems.

Finding solutions

Businesses and other stakeholders in the food sector need to work with farmers and suppliers on water-related activities to ensure current and future demand for produce is met and to reduce their risk to supply-chain disruption. At ASDA, for example, through sourcing from International Procurement and Logistics Limited (<http://www.ip-limited.com/>), we launched a water-trickle scheme for celery growers in Spain that provided a water-spray kit to farmers with the aim

of ensuring a secure supply of product to our stores. As demonstrated by the scheme, retailers' engagement with growers on water projects can help growers achieve better quality crops and higher yield. The success of growers translates into increased resilience of retailers as we can, in this case, source higher quality celery at a lower cost because the risk of volatile production level is reduced. In Morocco, we worked with an important citrus supplier on a project to convert existing sprinkler practices to drip irrigation; this resulted in a 60% reduction in water usage. By adding automation to the system, a further reduction of 40% was achieved.

We have learned that working in collaboration with others to improve water stewardship is a far more efficient way to achieve change. Because water is such a local issue and impacts on a variety of stakeholders, working together shines the light on who is most vulnerable and where solutions can be implemented most effectively. We have contributed to the guidance on water stewardship developed in collaboration with the Institute of Grocery Distribution (IGD) — a not-for-profit research and training institution that helps the food industry to meet the needs of the public. The initiative allowed stakeholders at all levels of the food supply chain to exchange ideas and increase awareness of water as a scarce resource¹². In the UK, ASDA has partnered with Linking Farming and the Environment (LEAF), a leading

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. □

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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