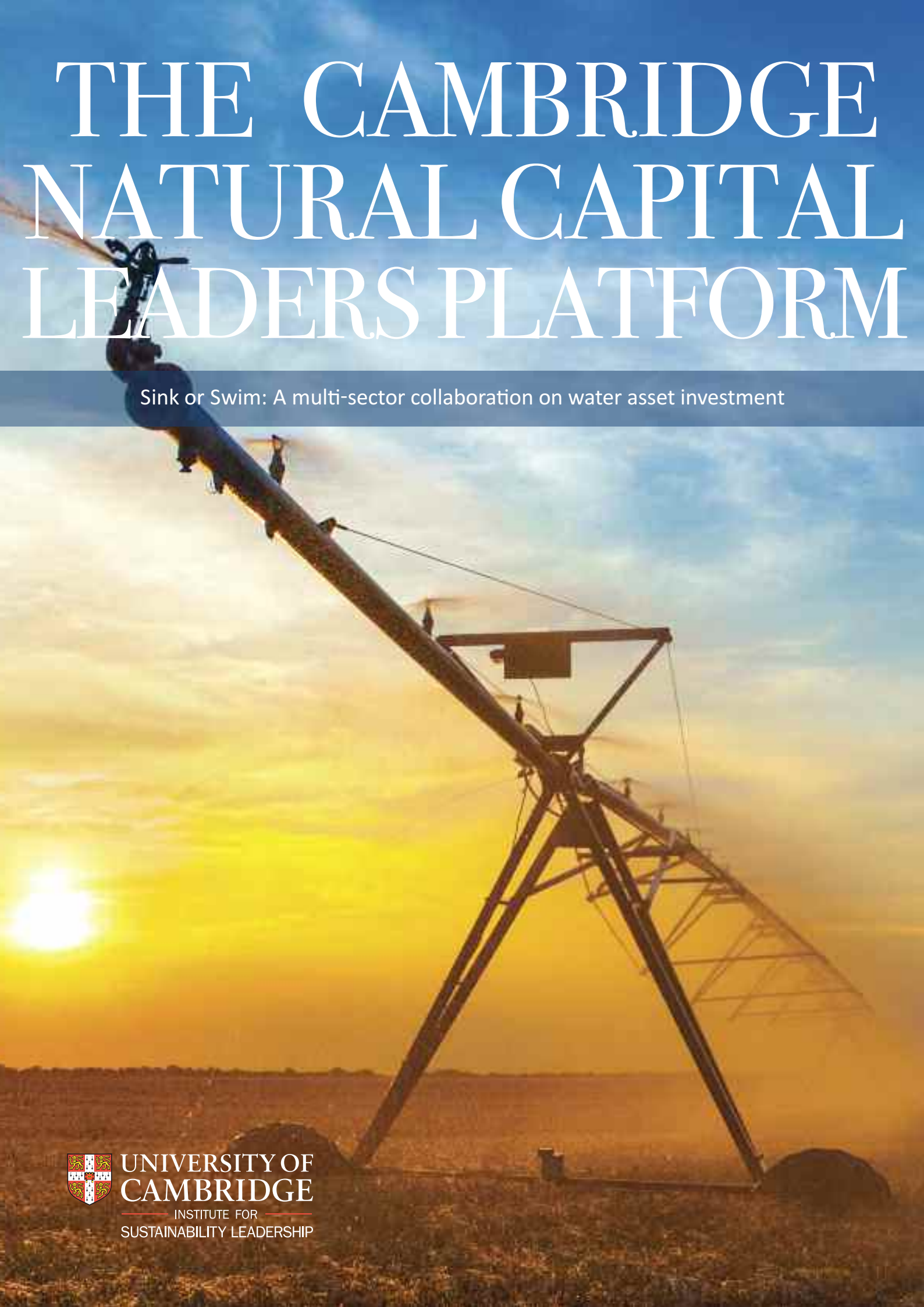
THE CAMBRIDGE NATURAL CAPITAL LEADERS PLATFORM

Sink or Swim: A multi-sector collaboration on water asset investment



UNIVERSITY OF CAMBRIDGE
INSTITUTE FOR SUSTAINABILITY LEADERSHIP

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1 This report can be viewed at www.cisl.cam.ac.uk/natcap or downloaded directly here

Executive summary

A new phase of action on water

Water as an economically strategic resource and a core element of natural capital underpins many business activities. Ensuring that water is carefully stewarded and available in sufficient quantity and quality is a subject of vital interest to business.

In the UK, the availability of upstream water resources is being affected by population growth and climate change. This is creating water stress and risks for businesses both now and in the future. To provide greater resilience to water scarcity, more innovative investments are required in water supply.

The current financing and regulatory channels in England and Wales for water infrastructure investment focus on a single-sector approach and are not designed to consider multi-sector investments. It is not water companies alone that should shoulder the burden, since water risks affect multiple sectors. There is therefore a need for a multi-sector approach to innovate financing models which considers different ways of using the existing and new finance channels to address the water asset investment challenges in the UK.

The Approach

This 'Sink or Swim' Collaboratory brought together different stakeholders to consider new partnerships that would achieve long-term resilience to water scarcity across multiple sectors. The implementation of multi-sector catchment based initiatives will provide businesses with the capacity to secure water supply during long-term droughts and significantly reduces associated business risks. It would also enable a more integrated planning and financing approach towards water investment and management.

This Collaboratory worked with nine companies across six sectors: finance, agriculture, retail, civil engineering, real estate providers and the water sector to explore novel financing models for a multi-sector catchment-based water asset investment and management approach. To ground the analysis and financing solutions that were developed, CISL and participating companies used a case study: a proposed water storage investment in the Wissey catchment. The Wissey catchment is located in the East of England which is the driest and one of the fastest growing economic regions in UK. It was also one of the pilot catchments for Defra's catchment based approach.

To understand the motivation and business case for various sectors to be involved in the Wissey project, the Collaboratory identified the value of water to businesses embedded in the complex web of commercial relationships. It further analysed the business case for each sector by considering the potential income streams and finance streams that can be derived from or contribute to the water storage investment. The income streams were extracted by considering the benefits of a water investment to each business; the potential finance streams were explored based on the commercial and contractual relationships in the value chain.

The Outcomes

The Collaboratory explored four potential financing, ownership and governance models for water storage solutions in the Wissey context. The finance models were co-developed with the corporate partners to incorporate practical perspectives from businesses. Policy makers, academics and non-profit organisations were also consulted during the process. The models were selected

Finance Model 1 suggests a scheme in which the water company provides 100 per cent of the up-front finance for new water storage but splits financing between regulated and unregulated channels; this reflects the regulated and unregulated usage of the water supply. This model allows the water company to maintain complete operational control over the asset which is in many ways similar to the conventional way of financing water infrastructure by water companies. However, the water company would be venturing into unregulated financing channels which do not have a guaranteed income stream.

Finance Model 2 splits the upfront investment between water companies and major water users in the Wissey Catchment – farmers. Farmers would co-invest in the multi-sector storage solutions, and own a share of the water resources as well as maintaining a proportionate ownership stake in the asset. This model envisages significant water trading between farmers and water companies.

Finance Model 3 engages a non-direct water user further down the supply chain – retailers. In this model, retailers become the major co-investor in the multi-sector storage options. The retailer finances the unregulated water asset to provide water services for farmers and private water users, and the water company would still be responsible for the financing of the regulated asset. This model leverages the complex relationship between retailers and their suppliers.

Finance Model 4 proposes a Water Service Company (WASCO) model which involves a third-party entity at the middle of the finance chain and serves as the key interface between the reservoirs, the investors and the water users. The WASCO model allows for an open platform with a wide range of stakeholders to make off-balance sheet investments in the multi-sector water storage options. The WASCO holds the core contractual arrangements with various parties and recovers the investment through water service fees.

to represent a broad spectrum of options for cross-sector collaboration and finance, ranging from more conventional water-company led approaches to pure private sector initiatives. They provide insight into various channels for finance, involving different combinations of stakeholder involvement.

This analysis breaks new ground in water investment management research. The research findings shed light on the possibilities for new financing channels applied in the water sector, and support future development of multi-sector collaborations in this area. Whilst each model has its advantages and disadvantages, these financing arrangements provide important foundations to structure and finance the necessary multi-sector water resource initiatives for business to be resilient to the ever changing climate and demands upon natural capital.

Innovative financing models are crucial to connect various actors in a multi-sector investment approach. To make this approach successful appropriate contractual relationships need to be developed; these should define the allocation of water resources amongst the stakeholders. Regulatory guidance and policy support is also required to open up and support this new water investment landscape.

1 Introduction

Water risks and business solutions

In the recent WEF Global Risks 2013 report, Chief Executives said they regarded water availability as one of the top five global risks to business[2]. Water as an economically strategic resource and a core element of natural capital underpins many business activities. Water scarcity can halt production, disrupt supply chains, lead to conflict with other water users and harm corporate reputations.

A water secure world means ending fragmented responsibility for water and integrating water resource management across all sectors and through the value chain. To achieve this, water companies, business and government agencies need to collaborate.

Synopsis

The Sink or Swim Water Collaboratory led by CISL, brought business and policy makers together to deliver a multi-sector vision in response to the critical debate on the growing pressures on scarce water resources. It identified sector specific business cases for action, based upon the different material relationships each have with water. Four novel financial mechanisms were developed that could enable the integration of innovative solutions to water security. This work focused upon the UK, with the intention that the frameworks that were developed could be applicable beyond the UK.

1.1 The UK water challenge

The UK is facing unparalleled challenges in relation to the sustainable management of its water resources and related ecosystems. These are already affecting businesses across the country. A report by the Institute of Civil Engineers estimated that by 2050 summer river flows could reduce by 35% in the driest parts of England and by 15% for the wetter river basin regions in Scotland[3]. This could put severe pressure on current water abstractions. Water stress is of particular concern in London and the South East of England, where the population is predicted to increase by approximately 23% by 2035[3]. Climate change will also affect the nature of water use. It is expected that as summers become hotter and drier more irrigation will be required. Farmers will have to increase their usage of irrigation from sources of blue water (stored or free-flowing surface and groundwater) as their ability to use green water (the water stored in soils or vegetation) will reduce. This will increase the pressure on supplies of blue water, which is the main source for public water supply provided by water companies.

Key message 1

The availability of upstream water resources is being affected by population growth and climate change. The days of water being regarded as a readily available commodity are long over. There is a need for a long term vision for water security that brings together business and government to harness and enhance natural capital and to collectively generate strategies and finance mechanisms that deliver resilience across multiple sectors. This necessitates a collaborative approach that brings to bear the benefits that a secure water suppply can provide across sectors.

2 World Economic Forum, “Global Risks 2013”, 2013.
3 Institute for Civil Engineers Report, “The State of the Nation, Water”, 2012.

1.2 Implementing change

More and more companies are recognising the importance of water to their business and the material consequence water scarcity can have. For example, the insurance industry has shown a clear interest in reducing the costs of flooding; whilst farmers, food producers, water companies and energy companies are only too aware of the importance of managing water to avoid scarcity. Business, as well as society, gains from solutions such as improved drainage, rehabilitation of natural habitats and pollution management. Yet we are still a long way from addressing and managing water across sectors at a more integrated level.

The implementation of cross-sector water strategies will provide businesses with the capacity to address the long term benefits of increased resilience to water scarcity. Some solutions, such as cross-sector partnerships in water asset development and management, have the ability to deliver more systematic water services, but the financing channels to enable such investments are not simple. The current institutional and business models focus on single sector investments and do not facilitate the delivery of cross-sector investments, nor have they been updated to account for multi-sector planning approaches.

Key message 2

A key component to an integrated water investment and management approach is financing models. To understand the potential models, one needs to understand how water infrastructure and systems are currently invested in and financed in the UK.

1.3 The financing challenge

In England and Wales, public water infrastructure is mostly financed by private water companies which are regulated by Ofwat (The Water Services Regulation Authority). Current investments in infrastructure in England and Wales stand at around £80m a week or £4bn per annum. But it is estimated that £96bn is required to fund investments in the water sector between now and 2030 which would require increasing the current levels of investments by at least £1.5bn per year[4].

Water companies usually self-finance and borrow in the capital market. Ofwat allows the recovery of the investment costs through increases in customer bills, and ensures that water companies, through income from the water bills, are able to finance their function and secure a reasonable return on their capital. These regulated infrastructure investments are relatively secure. However, economic regulators set price controls for the water and sewage companies so that the revenue that each company can collect from customers each year is capped. To a certain extent, the regulatory environment limits water bills and private investments beyond the water company remit.

Against a backdrop of increasing water bills, financing the return on infrastructure investment through increases in customer bills is under constant scrutiny from the public. Bills have risen by 45% in real terms since 1980 and are estimated to rise by a further 27% by 2030[5]. One illustration of the challenges faced by water companies to finance water infrastructure through the regulated investment channels is the Thames Water Tideway Project.

4 Atkins, “Future Proofing the UK Water Sector”, 2013.
5 Severn Trent Water & National Grid, “Changing Course through Sustainable Financing”, 2012.

Thames Water Tideway Scheme Case Study

The Thames Tideway Tunnel is a major new sewer, designed to protect the tidal River Thames from increasing pollution. This project will tackle the problem of overflows from London's Victorian sewers for at least the next 100 years, and enable the UK to meet European environmental standards. At 25 kilometres long and up to 65 metres deep from west to east London, it will be the biggest infrastructure project the UK water industry has ever undertaken.

Due to the complexity and scale of the project, the construction work is being split into three geographical packages, east, west and central. The successful bidders for these contractors are expected to be announced in May 2015, with construction due to start in 2016 and taking seven years to complete.

The project is estimated to cost £4.2 billion at 2011 prices and is due to be financed and delivered by a new company called Thames Tideway Tunnel Ltd, which will be independent of Thames Water and have its own licence from Ofwat. The maximum impact on customers' bills is estimated to be £70 to £80 per year, which will be added incrementally. The financing and delivery of the scheme has been problematic and Ofwat has so far rejected the proposal for additional customer price increases in 2014-15 to meet the increased cost of the Tideway Scheme.

Key message 3

The current financing channels for water infrastructure investment by water companies are not designed to consider multi-sector approaches. There is a need to explore different ways of using the existing channels to address the water asset investment challenges in the UK. There also needs to be a new focus on multi-sector partnerships that bring together different stakeholders, including regulators, government, businesses, NGOs and community groups, to deal with water asset investment and management at catchment, regional and national levels.

1.4 The collaborative solution

A multi-sector approach towards water infrastructure investment and service provision brings together the direct and indirect beneficiaries of a water management system. It can provide greater resilience across sectors and enables a more integrated approach to planning and financing towards water investment and management. The multi-sector approach can be applied to both water demand management and new water resource development, and can include measures such as water efficiency, control of leakage, building reservoirs, water recycling and water re-allocation.

This type of cross-sector collaboration has been encouraged by Defra's Catchment Based Approach which advocates "establish(ing) catchment partnerships to work collaboratively with local stakeholders"[6]. The multi-sector approach facilitates stakeholder engagement across catchment and regions, and potentially allows non-statutory water providers to increase their engagement in the supply and management of water.

Key message 4

To enable a multi-sector approach, it is important to understand the motivation and business case for various sectors to be involved in water investment and management. It is crucial to identify the current relationship businesses have regarding water and the materiality of water to their activities. The business case for different sectors can be analysed according to the potential income streams and finance streams derived from or contributing to a multi-sector investment. The income stream can be determined by considering the financial benefits of a water investment. The potential finance streams can be explored by examining the commercial and contractual relationships in the value chain.

6 Defra, "Catchment based approach: Improving the quality of our water environment", 2013. https://www.gov.uk/government/publications/catchment-based-approach-improving-the-quality-of-our-water-environment

2 A multi-sector approach

The short and long term benefits of securing water supply must be clearly identified to establish the business case for each sector to be involved in creating water solutions.

Business involved in the collaboratory analysed how their company revenues are dependent upon water. Detailed analysis identified how guaranteed water security could add value to different businesses. By bringing together and integrating the benefits of a secure water supply, the multi-sector approach developed solutions to finance water investments through enhanced future business revenue streams.

To examine how a potential multi-sector approach could be achieved, the collaboratory used a case study in the Wissey catchment to test its thinking. The Wissey was one of the pilot catchments for Defra's catchment based approach; issues around river flow and long term water security were identified early on by stakeholders as some of the key priorities for the catchment.

The Wissey project is also part of the Water Resources East Anglia (WREA) programme which brings together water companies, the Environment Agency (EA), Natural England and others to develop a long-term water resource strategy for the Anglian region. The analysis underpinning this case study arose out of the Wissey Catchment Partnership, which Anglian Water host.

2.1 A case study: the Wissey

Figure 1: Map of the Wissey Catchment location

To develop a multi-sector water investment model, the Collaboratory selected a case study in the Wissey catchment; it focussed upon a potential investment in water storage solutions.

The Wissey catchment is located in the East of England which is the driest and one of the fastest growing regions in UK. The catchment covers an area of 460km^2, of which about 57% is used for agriculture. The catchment's water source is the Wissey River and the Norfolk Chalk aquifer (Figure 1).

The catchment is faced with increasing demand for water whilst at the same time suffering from decreasing water availability. This mismatch between supply and demand is primarily due to climate change impacts and population increases to which the EA has reacted in recent years by implementing the Environment Agency's Restoring Sustainable Abstraction (RSA) programme; this has been incrementally reducing the overall quantity of water abstracted. Research by Anglian Water shows that agricultural and public water supply sectors will face deficits in the period to 2040 unless adaptation measures are introduced. For public water supplies, by 2040, a deficit of 8-40 Ml/d has been projected if adaptation measures are not implemented. The level of deficit in the agricultural sector is estimated between 12-16 Ml/d.

The agricultural sector has a lower level of resilience against droughts compared to public water supplies as 74% of the total annual licensed volumes for agricultural spray irrigation are from surface water, which is less resilient than groundwater sources. The EA places restrictions (hands off flow, HoF) on abstraction during times of low river flow, which affects over 50% of the spray irrigation licences in the River Wissey catchment.

About half of irrigating farmers in the Wissey catchment have their own reservoirs; however, these reservoirs are often designed for one season only, making them vulnerable to long-term droughts. This has knock on impacts up the supply chain for processors and retailers.

2.2 Water management approach

There are several potential solutions to meet increasing water demands in the Wissey catchment. Current plans to address predicted deficits in public water supply include a water transfer from the River Trent. However, this single sector approach does not address wider multi-sector issues on a catchment level.

To develop a more resilient water provision system and to secure water supply during long-term water shortages, it is recognised that all sectors need to decrease their dependence on direct summer abstractions and increase winter storage capacities. Therefore, multi-sector storage solutions were suggested, where water can be abstracted during high flows and stored for use during periods of low flows and high soil moisture deficit.

It was identified that an integrated larger scale high hydrological yield reservoir or reservoirs would likely offer more resilience against droughts compared to individual small-scale options. It would allow spray irrigators to secure resources during critical dry periods.

The Collaboratory proposed two solutions for a multi-sector approach: 1) a single multi-sector storage reservoir which is fully integrated (Figure 2) and 2) shared, sub-catchment level winter storage reservoirs in addition to a separate public water supply storage reservoir (Figure 3). Both reservoir options would provide water to domestic and non-domestic customers.

2.2.1 Option 1: single multi-sector storage reservoir

The single multi-sector storage reservoir offers a potential yield of 70 Ml/d, with 50Ml/d to public water supply and 20 Ml/d for agriculture. Water for agriculture is to be transferred to 5 local sub-catchments via small reservoirs with 48 hours storage.

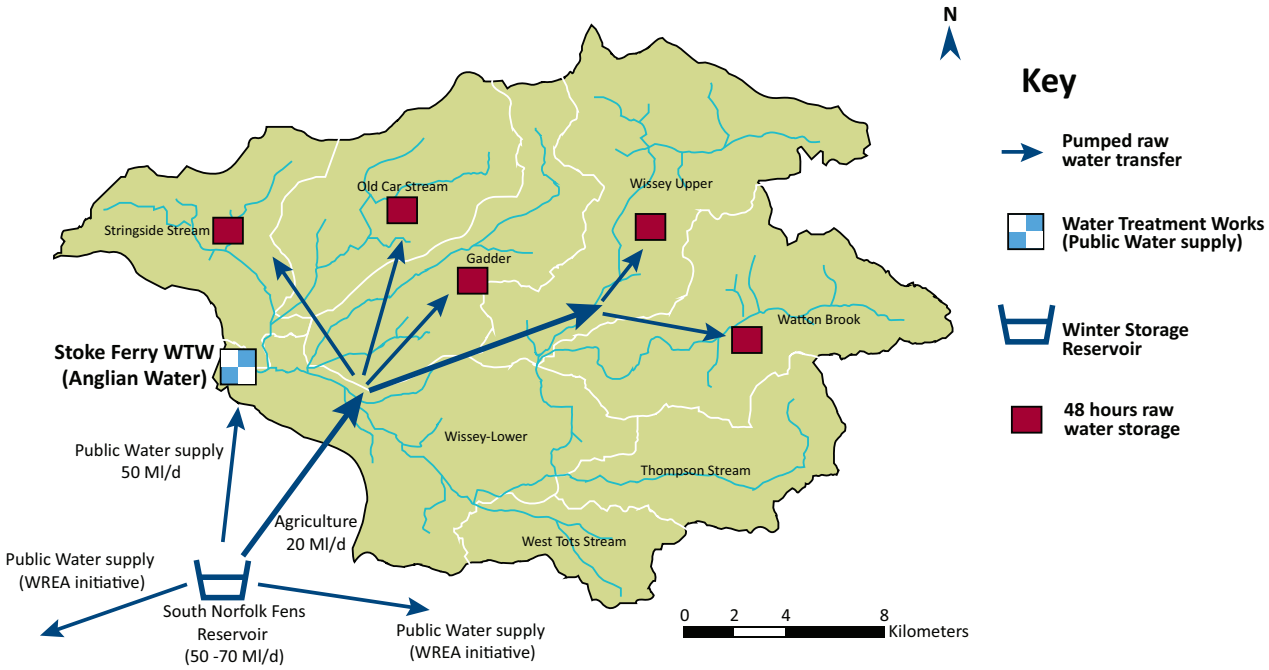

Figure 2 Option 1: Single multi-sector storage reservoir (fully integrated)

2.2.2 Option 2: sub-catchment level winter storage reservoirs

The second option consists of 5 sub-catchment level winter storage reservoirs (non-integrated/agriculture only) and a public water supply storage reservoir. It considers a 50 Ml/d major reservoir for public water supply plus 5 local reservoirs in sub-catchments. The construction of winter storage reservoirs potentially provides the opportunity for new entrants to maximise options under the proposed reform of the upstream market.

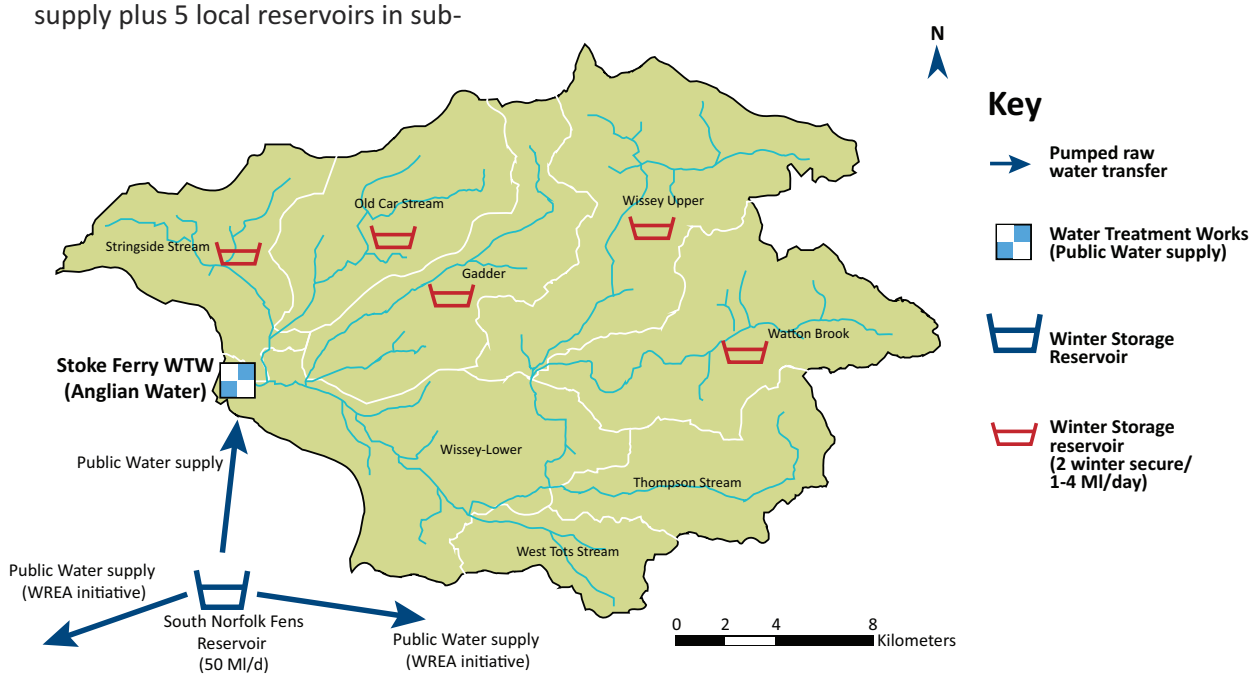

Figure 3 Option 2: Sub-Catchment Level Winter Storage Reservoirs for agriculture plus large public water supply reservoir

3 Building the business case

It is vital to understand the income and finance streams underpinning each sector's relationship with water to develop a clear business case for engagement in the water infrastructure investment.

The major stakeholders who have an interest in the supply and usage of water services in the Wissey catchment are: water companies, farmers, retailers, financial institutions, engineering consultancies and real estate service providers (Figure 5).

In the Wissey catchment, Anglian Water is responsible for the supply of potable water to household and non-household customers. The water company is also the largest abstractor by water volume and is therefore an important stakeholder in the multi-sector water investment project. The catchment area consists mostly of rural, agricultural land, and so farmers are the next largest water-users.

Processors and retailers are also key players in the overall agri-business supply chain via their sourcing, distribution and retailing activities. Financial institutions already offer financing support to farmers in the region and are likely to be the major sources of up-front finance for new water asset investment. Real estate service providers provide asset management advice to landowners, farmers, and water companies. Their work is closely related to the planning, investments and operations of the potential water investment and is therefore included in the stakeholder cross-sector analysis.

Figure 5: Business stakeholders involved in the Wissey multi-sector collaboration

The Collaboratory Approach

Participating businesses considered the benefits of a more resilient water supply. They explored where there might be opportunities to develop multi-sector investment to secure this supply. To justify investments, the businesses needed to examine the potential income and finance streams derived from and possibly contributing to a multi-sector approach. These are summarised in the following sections.

3.1 Water companies

Key Drivers for Water Companies

Water companies are facing increasing challenges of having to secure additional upstream water resources, due to pressures from population growth, climate change and sustainability reductions in water abstraction licences. One way to enable better balancing of water supplies and to develop a greater resilience across sectors is by water companies collaborating with various sectors[7].

7 Simpson, P., "Water stewardship in the twenty-first century", 2014, Nature Climate Change, 4(5), 311–313. doi:10.1038/nclimate2217

3.1.1 Why water security matters to water companies

In England and Wales, the majority of water and sewerage services are provided by 20 licensed monopoly water companies. They provide public water supply (PWS)[8] to domestic, public, industrial, commercial, voluntary and agricultural customers. The domestic customer base accounts for around 90% of their total turnover[9]. Water companies treat the water to meet European Union drinking water quality standards for potable water before supplying their customers. Some water companies also provide non-potable water to industrial customers. The regulatory drivers under which water companies operate require them to maintain a security of supply[10] index of 100 and to implement demand restrictions no more frequently than their agreed levels of service.

The water companies are the biggest abstractors of surface water in England and Wales. The process of abstracting water from a surface source or from an underground source is regulated by the EA. The EA is responsible for allocating water to water users and for issuing abstraction licences for abstractions of more than $20m^3$ a day.

It is important to note that farmers and many agri-businesses often directly withdraw water from surface water bodies or underground reservoirs, without going through public water supplies.

3.1.2 Income stream

In a multi-sector approach, water companies would co-invest with other parties in water schemes, such as water storage investments. It could be envisaged that water companies would trade their surplus supply to third-party water providers and private water customers. Water companies would be able to expand their services beyond public water supplies to private water supplies and further develop water provision to agri-business and industry. Water trading would be facilitated through the Water Abstraction Reform which has been under consultation since December 2013[11]. This would enable water companies to receive an income stream from their current public water supply services and also through enhanced water trading to agri-businesses and industries.

Apart from customer water bills, water companies could further obtain revenue from ecosystem and recreational services derived from the water asset. The additional water resources could support the development of environmental or recreational amenities such as parks. When the reservoir water is used for such purposes, an additional service fee could be extracted by water companies from such facility operators.

In summary (see Figure 6), the potential income streams water companies could obtain through investments in a new water reservoir might include:

- Water bills from currently ring-fenced public water supply customers
- Water service charges from private water customers
- Water trading to third-party water service providers
- Ecosystem service fees

8 In general terms, a public water supply is any water supply provided by a water company; whereas, if it is not provided by a water company, it is regarded as a private water supply.
9 Email response from the Consumer Council for Water, February 2014.
10 Each water company has a duty to maintain its water supplies efficiently and cost effectively. Ofwat use a security of supply index to show how effectively each company can meet its customers' demands. www.ofwat.gov.uk/regulating/prs_web201110perf_rel
11 Defra, "Making the Most of Every Drop – Consultation on Reforming the Water Abstraction Management System", 2013.

3.1.3 Finance streams

In a multi-sector approach, apart from investments through regulated channels, water companies could also finance the water asset through unregulated channels using shareholder equity. This is because the water resource asset is designed to supply both regulated activities for conventional public water supply customers and unregulated activities for private customers. The regulated part of the asset would be funded through the Ofwat price control with the capital expenditure going into the company's RCV (Regulatory Capital Value)[12]. The remaining unregulated asset would be financed by shareholders or other commercial partners.

An additional driver for finance is the prospect of upstream competition which arguably might cause the development of new water infrastructure to meet market demands.

Water companies would need to ensure a clear distinction between the regulated investments and the unregulated investments and that there was no cross-subsidy between the two[13].

Investments under unregulated channels would not be under the Ofwat pricing control and would not have the same guarantee of income stream as investments via regulated channels. Therefore, unregulated investments would likely entail a higher risk and water companies would probably demand a higher rate of return than for the regulated investments. They may also require an alternative guarantee mechanism, such as longer-term contracts to accompany water purchases.

In summary (see Figure 6), the potential channels for water companies to finance a multi-sector water infrastructure could include:

- Finance through regulated channels
- Finance through unregulated channels

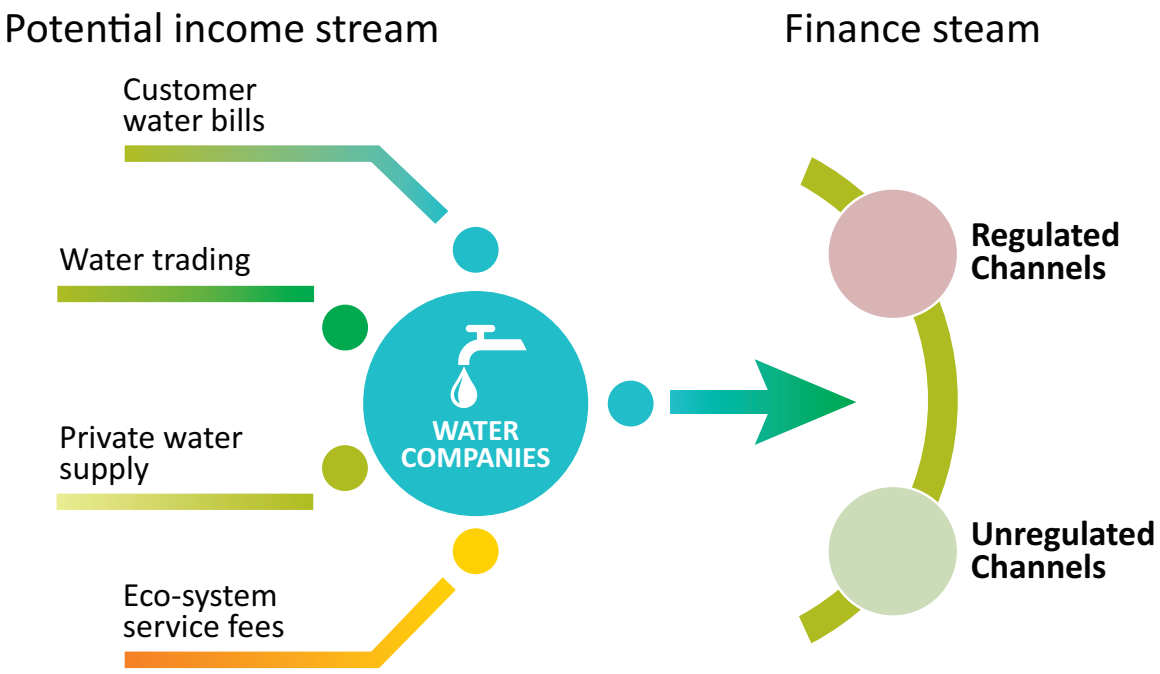

Figure 6 Business model for water companies investing in multi-sector water infrastructure

12 Regulated Capital Value (RCV): total value of the capital assets employed by the utility.
13 Ofwat, "Regulatory Rules Affecting Water Companies in a Future Abstraction Regime", 2013.

3.2 Farmers

Key Drivers for Farmers

Agriculture lacks resilience to dry periods and faces a predicted reduction in the availability of water in the future. Due to the business-driven demand for consistent produce , it would be beneficial to farmers to secure additional water resources.

3.2.1 Why water security matters to farmers

Farmers are significant water users in the Wissey catchment. Farmers use both raw and potable water to irrigate crops. If they obtain water through abstraction from rivers, aquifers or farm reservoirs, the process is regulated by the EA which issues water abstraction licences. Water trading of surplus water already occurs between farmers.

It is important to note that many farmers not only engage in agricultural activities but also invest in the land assets as landowners[14]. In this respect, farmers are not only potential recipients of water supply and services, but are also potential investors in water assets.

Access to sufficient water supply is fundamental to the livelihood of farmers. Due to changing weather patterns, it is predicted that crops are likely to need more varied sources of water in the future. Population growth will also exert more pressure on agricultural water supply. In England and Wales, water availability for agriculture from direct intakes and groundwater is being reduced through regulatory measures to achieve sustainable rates of abstraction under the Environment Agency's Restoring Sustainable Abstraction (RSA) programme. There are few new licences available for consumptive water use and the EA is claiming back abstraction licences in many regions.

Farmers cultivate and grow crops which they sell to packers or directly to retailers/processors. Consistent water supply is critical to meeting the produce specifications set out by retailers. However, there is an inherent seasonal mismatch between high water demand for agriculture and water availability. Peak demand for agriculture usually occurs in the summer which coincides with low flow periods.

3.2.2 Income stream

Investing in a water resource asset would enable a more secure supply of agricultural water. This could potentially lead to competitive water costs as well as enable resilience against water-stress caused by climate and demographic changes. An abundant and stable supply of water for irrigation would result in better crop yield and higher quality crop. Furthermore, farmers could possibly trade surplus water to other stakeholders or up-stream water providers and receive an income. Water-trading, however, would need regulatory support under the proposed Water Abstraction Reform to be implemented by early 2020. Under this reform, measures could also be introduced to facilitate intra-catchment trading.

By participating in a systematic water asset project, apart from financial and economic gains, famers could also benefit from resilience against drought, better water management and a more comprehensive approach towards water investment. If the retailers are involved in the water infrastructure investment, the projects could potentially enhance retailer-supplier relationships through collective, long-term engagement and water service contracts.

In summary (see Figure 7), the potential income streams and benefits that farmers could derive from a collaborative water investment are:

- Better quality, higher crop yield
- Resilience against drought
- Income from water trading
- Improved water management
- Enhanced supplier-retailer relationship

14 For example, in the energy sector, famers rent out land to third-party providers who install solar panels on the land.

3.2.3 Finance streams

There are several ways farmers could contribute to a multi-sector water infrastructure investment. With direct finance, farmers could collectively invest using personal allowances or loans from financial institutions. There has also been considerable discussion within the water industry about the Common Agriculture Policy (CAP) reform which could provide finance to safe-guard the water environment, such as through the potential development of farm or multi-sector reservoirs.

As farmers are also often landowners, they could provide support, such as offer land for the construction of the water asset. Farmers could also put forward water-usage guarantees to the water infrastructure investment. A water-usage guarantee will ensure a secure demand of the water services and a stable investment revenue stream for project investors. To pay for the water consumption, farmers may prefer to pay a water service fee consisting of a baseline fee and a pay as you go water usage fee. The baseline fee will provide a certain level of security to the revenue; whereas the water usage payment will allow flexibility for varied water-usage. A novel tariff structure could embed a premium for higher reliability in the availability of water.

There are a number of ways (see Figure 7) farmers can contribute to a collaborative water investment through the following ways:

- Direct financing using personal allowances or a loan from a bank
- Provision of water usage guarantees and paying a baseline water service fee
- Provide land for construction of water

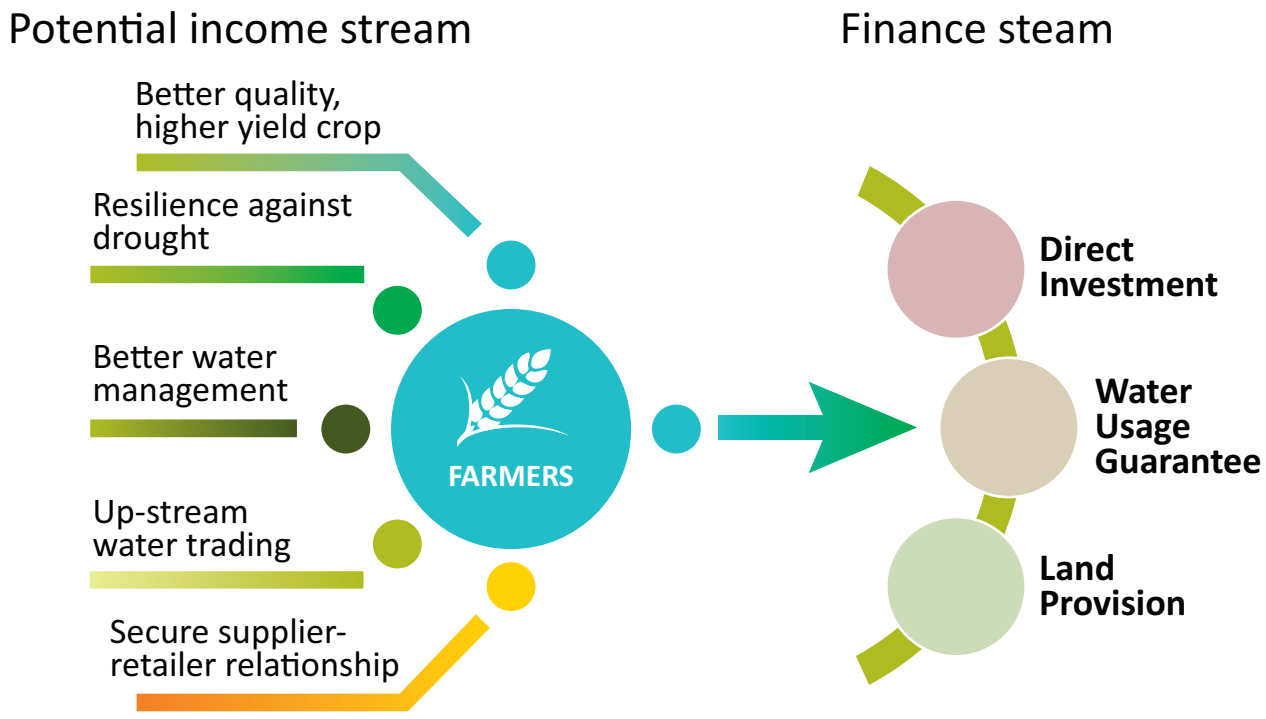

Figure 7 Business case for farmers investing in a water project

3.3 Retailers

Key drivers for Retailers

Retailers have a strong interest to invest in water infrastructure and services which will secure produce sourcing by balancing seasonal variations and mitigating against long-term risks of water scarcity.

3.3.1 Why water security matters to retailers

Retail is another sector which has an apparent interest in water availability and quality[15]. Retailers are major buyers of agricultural products, the yield and quality of which is directly affected by the availability of water.

Natural water supply fluctuates year to year thereby affecting crop growth and challenging the requirements of retailers for consistent quality and quantity of produce. Retailers often source produce from one or two channels: a direct internal sourcing route and a packer route. When the retailer directly sources products from suppliers, it is directly exposed to water-related risks and subsequent yield and cost fluctuations. Through the pack house route, the supplier places an order/contract and the packer guarantees the quantity and quality of the produce. Through such a guaranteed contract, the packer is in effect absorbing the various risks embedded within sourcing, including potential variations in produce quantity or quality resulting from instabilities in water supply. In this respect, the retailer's immediate exposure to water risk is to an extent buffered by the contracts with the middle man. However, this does not prevent the retailer from being exposed and affected by the longer term impacts of water supply variation.

Under both direct and indirect sourcing, retailers often have to over-contract or source from various suppliers, often overseas, to ensure they have sufficient quantities of produce. The process of over-contracting increases the transaction cost of sourcing which may ultimately translate into higher prices for customers.

3.3.2 Income stream

By participating in a multi-sector water storage solution, retailers are essentially engaging with growers to help them secure a more stable water supply which would lead to better quality and higher produce yield. This in turn would enable the retailers to potentially source produce of higher quality and quantity at a cheaper price, with higher margins. Therefore, the multi-sector water investment could shield the retailers from water-induced market fluctuations and protect the retailers from price hikes. As the quantity of produce will likely be more stable, it will also eliminate the need to over-contract.

By supporting suppliers in better water management, retailers could also potentially enhance retailer-supplier relationships. Given the complexity and scale of retailer sourcing activities, it may be beneficial for retailers to consolidate their supplier base[16].

In summary (see Figure 8), the various income streams derived from retailers' investment in water infrastructure and services could include:

- Better quality and potentially cheaper produce
- Secure quantity of produce supply
- Reduced transaction cost of sourcing
- Protection from price hikes caused by water-related market fluctuations
- Consolidated retailer-supplier relationship

15 Kelly, P., "What to do when we run out of water", 2014. Nature Climate Change, 4(5), 314–316. doi:10.1038/nclimate2211

16 There are examples of retailers supporting suppliers in water-related activities outside the UK. ASDA for example, launched a water-trickle scheme for celery growers in Spain, in which they provided necessary water-spray kit to farmers.

3.3.3 Finance streams

There are various ways in which retailers could contribute to the multi-sector water investment. Types of potential action range from direct financial investments, in-kind support, brokerage services, or guarantee of purchasing contract to suppliers and growers.

Retailers could provide up-front finance or embed the investment in the contractual relationships with the suppliers, such as allocating a marginal price per unit of produce to the water project. Given that many retailers have a retail banking arm, retailers could also indirectly finance the water reservoir by providing loans to suppliers and growers for subsequent direct investments in the project.

Retailers could provide non-financial contributions such as tools, information, or serve as a broker to the multi-sector water asset investment. As a broker in a water project, retailers could potentially bring together various suppliers and growers to facilitate the establishment of a water investment consortium. Retailers have a broad supplier base and, by being at the end of the supply chain, can exert influence on various stakeholders.

Retailers could play a crucial role in providing purchasing contract guarantees to growers and suppliers who consume water from the water reservoir. This would generate consistent water usage from the reservoir, which would ensure a secure income stream; this would be crucial to other investors. However, this potential retailer purchasing contract guarantee can only realistically be established if there are long term contracts between supplier and retailers; this is not currently the situation.

In summary (see Figure 8), retailers can contribute to a water project in the following ways:

- Direct financing up-front, either in the project or through contracts with suppliers
- Offer loans to growers and suppliers
- In-kind support to suppliers and offer a brokerage service to stakeholder
- Provide guarantee of purchasing contracts to suppliers

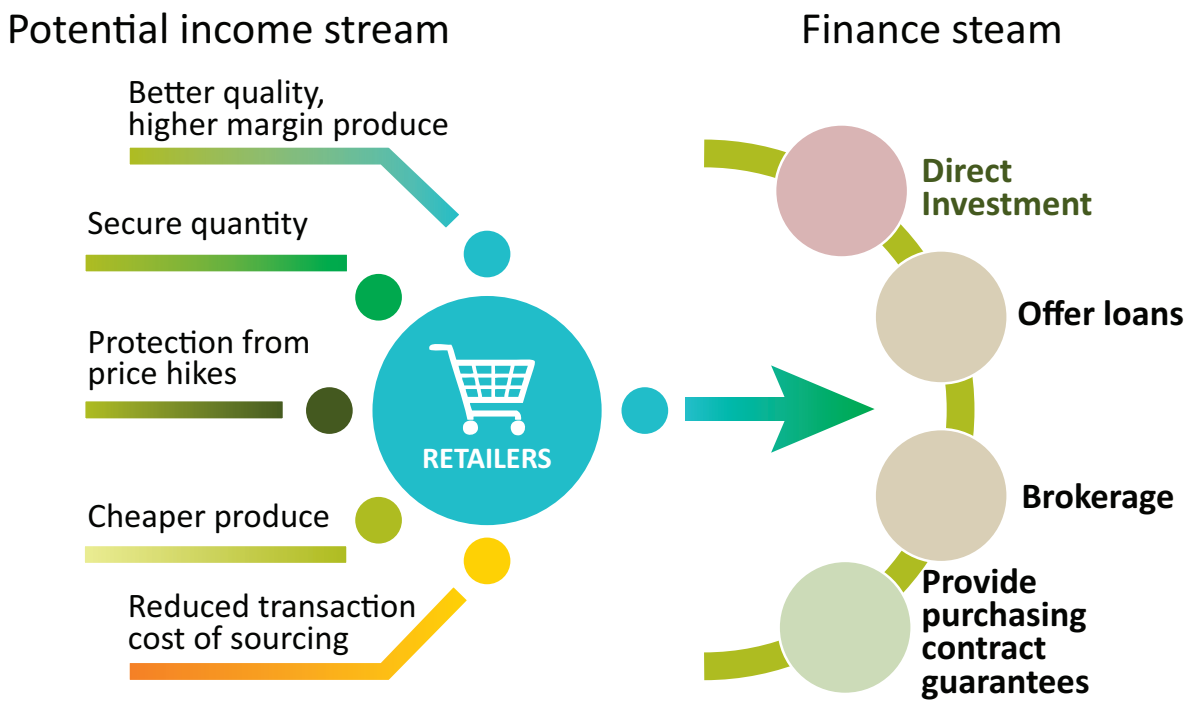

Figure 8 Business case for retailers investing in a water project

3.4 Real estate service providers

Key drivers for Real Estate Service Providers

There is a strong incentive for RESPs to engage in a multi-sector water reservoir investment. The project would potentially bring additional revenue to RESPs in the business areas of property development and management advisory services.

3.4.1 Why water security matters to real estate service providers

Real estate service providers (RESPs) offer consulting services and advice in connection with commercial, residential and agricultural properties, property related financial services and investment management. As investments in a multi-sector water reservoir involve property asset development and management, RESPs are important stakeholders.

In property developments, RESPs evaluate the value of the land which often serves as collateral for the land owner to borrow against. Water is a crucial factor determining the value of the land, which is graded. The RESP will also assess whether there is sufficient water supply to support the proposed property operations[17]. In addition, the RESP will also advise on the application of planning permissions and help investors secure finance and potential buyers.

In property management, the RESPs provide landowners with information on how to manage and invest in the land. The RESPs may also participate in the actual operations of the asset, such as run a farm on behalf of the landowner. In such a scenario, the service provider usually needs to meet the operational targets of the landowners, such as achieve a certain crop yield. A secure water supply would potentially increase operational efficiency and crop yield, allowing the RESPs to meet management targets.

The RESPs could also offer water infrastructure brokerage services by supporting planning applications, assessing the potential value of the water asset, securing finance and locating buyers.

3.4.2 Income stream

With the various business opportunities a water project could offer to real estate service providers, the potential sources of income include (see Figure 9):

- Additional revenue from asset transaction and advisory services
- Additional revenue from property management services
- Water infrastructure brokerage fees

17 Packers, for example, require sufficient private water supply in order to operate.

3.4.3 Finance stream and other contributions

The RESPs could either make direct investments or contribute in-kind to a multi-sector water infrastructure investment. Some RESPs manage their own real estate funds which they could access to make direct investments in the water infrastructure development. They could also provide support via their various business channels, such as offer a brokerage service. The potential finance streams and contributions can therefore be summarised as (see Figure 9):

- Direct investment through real estate funds
- In-kind support and infrastructure brokerage services

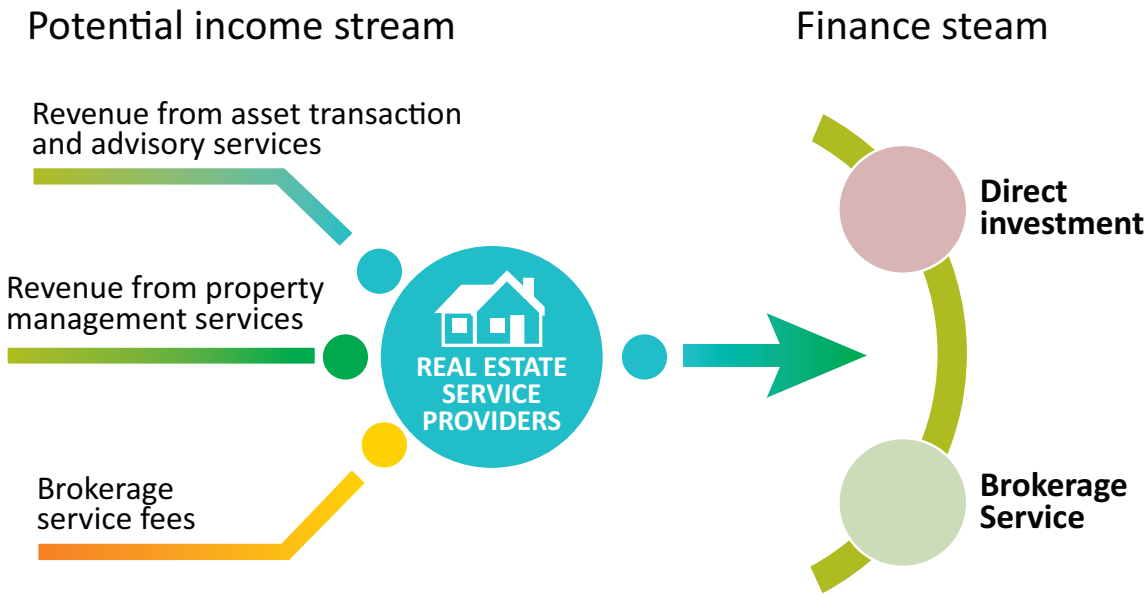

Figure 9 Business case for real estate service providers investing in a water project

3.5 Engineering consultancies

Key drivers for Engineering Consultants

By engaging in a multi-sector water project, engineering consultancies could potentially increase their business activities in the water sector. They could provide detailed design and construction advice and help develop catchment-wide water plans, which could create opportunities for future water projects.

3.5.1 Why water security matters to engineering consultancies

Engineering consultancies provide independent expertise in engineering, science and related areas. In the water sector, they offer services such as water strategy planning, flood management advice and infrastructure design and maintenance. They advise on and design the delivery of engineering solutions, including planning and feasibility analysis, design and procurement of construction supervision. Beyond technical engineering consulting, they also help develop water resource master plans for cities and regions.

3.5.2 Income stream

Engineering consultancies could increase revenue through their conventional business areas by engaging in a multi-sector water investment. They have the advantage of understanding the technical aspects of a water infrastructure project which underpins a water resource development scheme.

The potential income streams from participating in a water infrastructure project therefore include (see Figure 10):

- Additional revenue from water infrastructure engineering consulting services
- Additional revenue from catchment-wide multi-sector water planning
- Water infrastructure brokerage fees

3.5.3 Finance stream and other contributions

Engineering consultancies can contribute to the multi-sector water reservoir investment through their various business channels. These services can potentially be paid for through an annuity model instead of up-front. There is also a possibility to offer in-kind consultancy services and serve as a broker to the various stakeholders involved in the project.

In summary, the potential finance streams and contributions engineering consultancies can offer to a water infrastructure project include (see Figure 10):

- Infrastructure consulting services
- Multi-sector water plan
- Brokerage services

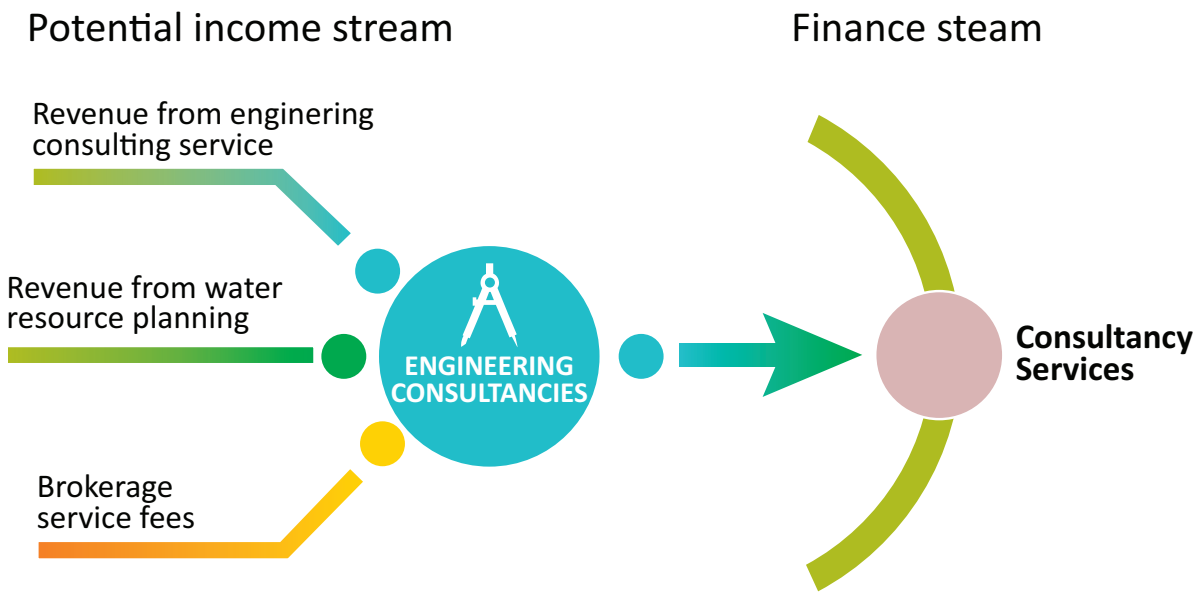

Figure 10 Business case for engineering consultancies involved in a water project

Key drivers for Financial Institutions

By engaging in a multi-sector investment, financial institutions could potentially expand their business lending activities to farmers or consolidate their project finance arm through investments into the water infrastructure investment.

3.6.1 Why water security matters to financial institutions

Financial institutions have a major role to play in investing in a more resilient water system. A report by HSBC shows that more than USD175 billion is needed to provide universal access to water for all poorly-serviced populations worldwide, assuming the use of low cost technologies[18]. The requirements for initial investments are large, but cumulative benefits of the water and sanitation infrastructure would eventually pay off and thus provide huge business opportunities for banks.

There are two business activities which a financial institution undertakes that are directly relevant to investments in a multi-sector water infrastructure: 1) business and corporate lending and 2) project finance in infrastructure projects. Financial institutions could offer loans to farmers who directly invest in the water project or provide project finance to the water investment.

3.6.2 Income stream

By considering the benefits of financial institutions' engagement in a multi-sector water investment, the income streams could include (see Figure 11):

- Additional revenue from business lending to farmers
- Additional revenue from project finance in water infrastructure

3.6.3 Finance stream

Financial institutions can either directly finance the water project through project finance channels, or indirectly finance through lending to farmers who take an equity stake in the water infrastructure investment.

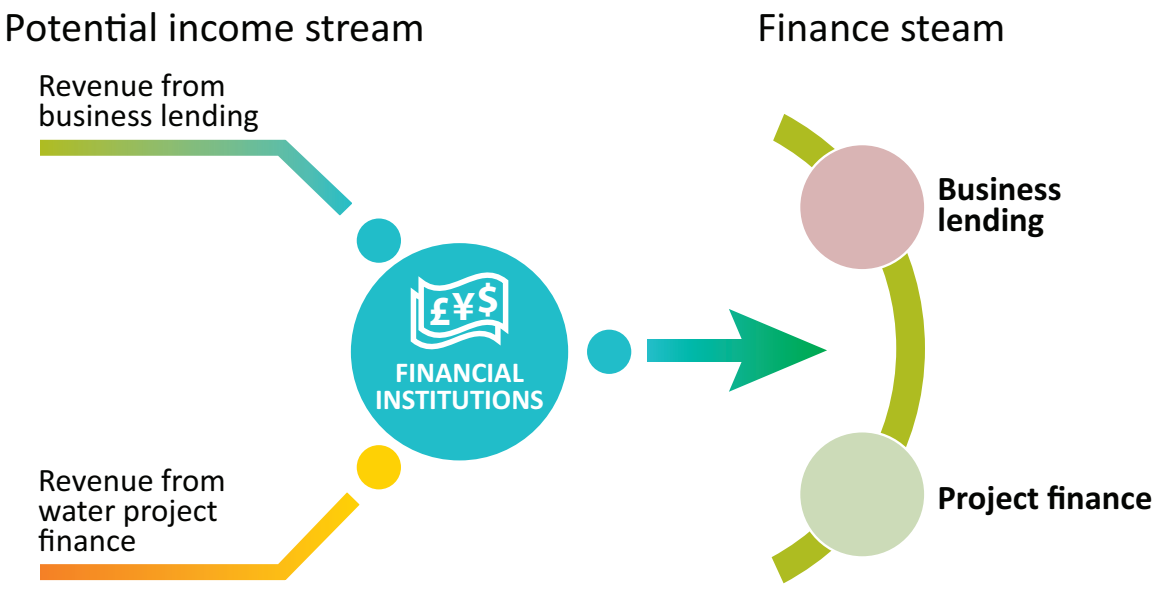

Figure 11 Business case for financial institutions investing in a water project

18 HSBC, "Exploring the links between water and economic growth", 2014.

3.7 The Wissey business case

The previous sections' analysis identified clear benefits and potential income streams of a more secure water supply for major stakeholders in the Wissey catchment. The analysis also explored the potential finance streams for each sector to contribute to the initial funding of a multi-sector water investment. Before bringing together different finance and income streams to form multi-sector finance and investment models, it was important to examine the overall economic costs and benefits of the Wissey reservoir investment.

3.7.1 Costs

The estimated costs of the proposed multi-sector storage options includes capital costs and operating costs, as demonstrated in Table 1.

Reservoir Option 1 consists of a single integrated multi-sector storage reservoir with 5 smaller reservoirs close to the end-users. Some technical challenges of operating the multi-sector reservoir are envisaged: a significant amount of pumping will be needed to transfer water from the large reservoirs to smaller storage points, and ultimately to the end-users. This will require additional engineering work and upfront-investment. The operations of the transfer system are also likely to entail high operational cost, especially in terms of energy, as demonstrated in Table 1.

Reservoir Option 2 consists of various medium scale reservoirs as well as a large standalone reservoir for public water supply. It entails a lower operational cost as there is no need for further water distribution from a central reservoir. Therefore, it may seem that Reservoir Option 2 is more optimal based on costs concerns. However, Reservoir Option 1 provides a simpler governance structure as one single party may have complete ownership of the central reservoir, which may have greater appeal to stakeholders.

Reservoir Option	Capital Cost	Operational Cost (per annum)
1	£182,000,000	£286,000
2	£180,000,000	£156,000

Table 1- Comparison of reservoir development costs

3.7.2 Benefits

The potential revenue streams generated from the water reservoir can come from the sale and trading of water. A major direct revenue stream derives from water bills from consumers. This will be determined by the reservoir water tariff and volume. The pricing of the water generated from the reservoir would need to cover the Total Expenditure (TOTEX) – CAPEX and OPEX – of the reservoir, the Environment Agency abstraction licence fees, and generate the returns desired by investors.

There is a need to differentiate the income stream between regulated and unregulated water supply. The proportion of the water reservoir financed through the regulated framework will be recovered through consumer water bills, which is guaranteed. The remaining proportion financed through unregulated channels will be recovered through contracts with purchasers of the water, and there may need to be some kind of private usage guarantee mechanism. A clear pricing transfer system needs to be in place to ensure that there is no cross-subsidy between the regulated and unregulated parts of the business.

It is necessary to compare the reservoir tariffs with what consumers are currently paying for water. Farmers currently pay around 35p/m^3 for water, as determined by abstraction licences issued by the Environment Agency[19]. The cost of water from individual small scale reservoirs is between 37-85p/m^3, which takes into account the capital and operating costs of building the small scale reservoirs and winter abstraction licence fees. Water tariffs from the multi-sector storage are likely to be higher as the tariffs need to cover the higher TOTEX of investing in the multi-sector reservoir. This is in contrast to the lower costs of direct water abstraction or farmers investing in their own small-scale reservoirs. However, the higher cost can be justified since the multi-sector options provide better resilience against severe multi-season drought events; individual farmers' reservoirs rarely provide resilience for one dry winter. Thus to ensure long term resilience and reduce risk for farmers and other stakeholders, the multi-sector storage options are preferable despite the higher cost.

19 This is an estimated calculation based on the Environment Agency's Abstraction Charge Scheme 2013/2014.

4 Innovative financing models:
A vision for multi-stakeholder financing

The high upfront cost of developing the proposed multi-sector water storage solutions in the Wissey catchment poses challenges for finance. To enable such a multi-sector collaborative approach to water infrastructure investment, innovative funding models are necessary.

Drawing on the earlier analysis of the business cases for various sectors to invest in a more secure water supply, four possible models were developed for stakeholders to finance the multi-sector water reservoirs.

The four models are underpinned by the current business relationships between Wissey stakeholders and their dependence on water. The finance models were developed by linking finance and income streams from each sector. Each model has its unique strengths and implementation challenges. As well as the economic and business interactions, these models also take into account the current and future evolution of the institutional environment of the water sector. Some models are directly suited to the present regulatory structure of the water industry, whilst others may require further institutional support.

The following sections introduce the four models. They are illustrated in diagrams which demonstrate the major stakeholders involved in the multi-sector water reservoir and highlight the finance flows and potential income streams which connect them.

4.1 Finance Model 1:
single sector financing and multi-sector storage solutions

Finance Model 1 proposes a funding mechanism which is in many ways similar to the conventional way of financing water infrastructure by water companies (Figure 12). The water company is the sole financier of the water reservoir and provides 100% of the up-front finance through an on-balance sheet investment. However, compared to the conventional methods of finance, the water company invests in 75% of total asset through regulated channels and invests in the remaining 25% through unregulated channels via shareholder equity.

75% of the asset, which is financed through regulated channels, is used for public water supply whereas the remaining 25% is used to provide the private water supplies to farmers and industry. Therefore, 75% of the investment is recovered through consumer bills and 25% via service charges from private parties. The income stream from public water consumers is guaranteed but the income stream from private parties is not and entails higher risk for the water company.

In Finance Model 1, the farmers and other private water users do not provide direct up-front financing, but will be able to purchase water or make use of the water services provided through the unregulated 25% of the water asset. Farmers may be required to provide a baseline water usage guarantee and then pay for any additional water as needed. This water usage guarantee will provide water companies with a secure income stream from the unregulated asset. Farmers will also be able to ring-fence a portion of the unregulated water supply. Retailers could contribute to the overall project by offering

longer term purchasing contracts which would in turn give farmers more security over their water usage and subsequently more confidence to pay a baseline service guarantee fee. The retailers could be further protected through commercial insurance covers.

Figure 12 Finance Model 1

4.1.1 The benefits

The key advantage of this financing model is that it does not diverge too far from the current financing channels for water infrastructure investments, but allows for a multi-sector usage of the water resources.

Operational control of the asset would lie with the water company which aligns with its current asset-management strategies. The water company expands its water services to more non-domestic water users.

4.1.2 The barriers

The challenge of this model is that the water company needs to venture into unregulated investment activities which do not have a guaranteed income stream as with Public Water Supply (PWS). In order for shareholders to be comfortable with this approach an income guarantee mechanism is likely to be required.

There are also regulatory challenges associated with water companies taking on a larger proportion of private water services. Ofwat would need to make stricter provisions in the water company licences to ensure that there is no cross over between the regulated and unregulated parts of the water company's businesses.

In Finance Model 1, as farmers are neither direct investors nor asset owners, they are likely to have less negotiating power over the provision and allocation of water, especially in times of water scarcity. There is a risk that water companies will dominate the water trading arrangements and water resource allocation. However, one could envisage a body similar to Ofwat which could oversee the allocation of unregulated contracts.

4.2 Finance Model 2:

joint water company and farmer financing and multi-sector benefits

Finance Model 2 splits the upfront investment between water companies and the major water users in the Wissey catchment – farmers (Figure 13). It is similar to Finance Model 1 in that the water company is undertaking the majority of the investment. However, farmers are also collectively providing upfront capital to finance the reservoir. Farmers may take out a loan from a financial institution.

The water company finances the regulated 75% of the water storage asset and farmers finance the remaining 25% which represents the unregulated share of the storage asset. The water company will therefore own and utilise 75% of the asset for PWS, and the farmers will own and share the remaining water resources. Each private investor will own a column of water proportionate to their financial contributions.

According to this financing arrangement, 75% of the investment will be recovered through domestic consumer water bills and 25% through private water service fees. The regulated income stream will be secure for the water companies, however, the unregulated income streams will not be guaranteed for the farmers. Farmers are therefore bearing the investment risk associated with financing the unregulated portion of the asset. Apart from consuming the water resources themselves, farmers may also trade surplus water to private companies or to upstream water companies. Therefore, as well as benefiting from the water services provided by the water reservoir, farmers may also receive an income stream from water trading.

Similar to Finance Model 1, retailers may provide additional benefits to farmers by offering them long term contracts; this will give farmers the guarantee that they will use the water they have invested in. Other parties, such as engineering consultancies and real estate service providers may also offer support, as they too benefit from the development of a new water infrastructure.

4.2.1 The benefits

In Finance Model 2, as farmers are co-investing in the multi-sector reservoir, they maintain part ownership of the asset and thus have more control over the allocation of the water resources. They would own a column of the water and also maintain a certain level of operational control. This model has the ability to bring together farmers to act collectively in water stewardship.

4.2.2 The barriers

Particular challenges for Finance Model 2 are asset ownership and the allocation of water. Water companies will no longer have full operational control over the reservoir which differs from their current asset management practices. To share the risks and rewards of investing in and operating the water asset between parties, there will need to be clear contractual arrangements in place, which is likely to entail complexity and some higher transaction costs.

As this finance model could encourage water trading between farmers, water companies and other private water users, further regulatory reform is required to facilitate more extensive trading amongst non-traditional water providers.

A final barrier is whether farmers are willing to underwrite the risk of the unregulated asset, as it does not have a guaranteed income stream. However, stakeholder meetings with the farming community indicate that farmers frequently undertake unregulated activities and that risk is not a barrier in itself, rather the risk and returns in combination.

Figure 13 Finance Model 2

4.3 Finance Model 3: retailers become water service providers

In Finance Model 3, instead of farmers collectively financing the unregulated part of the water reservoir, non-direct water-users further up the supply chain, such as retailers, become the key co-financier (see Figure 14). The water company still finances the regulated part of the water asset. The retailer may borrow from a financial institution to cover the up-front finance.

The water company owns 75% of the asset for PWS, and the retailer owns the remaining 25% of the asset. The water company and the retailer may be able to trade water between each other to balance water demand and supply. The water company will be remunerated through the income stream from domestic water customers whereas the retailer will recover investment through service fees from water provision to farmers and private water users. It is possible that the cost of the water provided to the farmers by the retailers could be incorporated into the contractual negotiations around the price of produce.

By providing water to farmers, the retailer is essentially embedding another level of contractual service in their current relationship with suppliers. Currently, retailers such as Asda already invest in small scale infrastructure to support supplier agricultural activities in an overseas context[20]. It is in the interest of retailers to ensure that suppliers have secure supply of water.

4.3.1 The benefits

The major benefit of this model is that it leverages the relationships retailers have with suppliers. As major purchases of agricultural produce, retailers have an interest in ensuring water is readily available for their suppliers; this provides guarantees of consistent quality and quantity of produce, and can diminish the need for costly over-contracting. By investing in a water storage asset, retailers can become directly involved in ensuring that water is supplied to their farmers when it is most needed.

4.3.2 The barriers

The major challenge of this model is the delicate relationship between retailers and suppliers. Some farmers may be reluctant to accept retailers as a water supplier when they already have a lot of influence over their activities through complex contracts. The water service contracts may add additional complexity to the sometimes already intricate relationship between retailers and growers. This type of model may be more feasible in relatively vertically integrated supply chains.

Another barrier is that retailers would need to extend beyond their core businesses to provide water services. They may lack the necessary expertise to offer such services and would most likely need to outsource the delivery to a third-party provider.

20 Asda 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 their stores.

KEY

- ENGINEERING CONSULTANTS
- REAL ESTATE SERVICE PROVIDERS
- FINANCIAL INSTITUTIONS
- INSURANCE COMPANIES
- WATER COMPANIES
- FARMERS
- RETAILERS
- REGULATED CUSTOMERS
- WATER INFRASTRUCTURE (RESERVOIR)
- FINANCE STREAM
- ENABLING FACTORS

Figure 14 Finance Model 3

4.4 Finance Model 4:

WASCO model – a catchment based collective 'pot'

Finance Model 4 proposes a Water Service Company (WASCO)[21] model which involves a third-party contractor that sits in the middle of the finance chain and serves as the key interface between the reservoir, the investors and the water users.

The third-party contractor aggregates finance and recovers the investment through water service fees. This third-party contractor would most likely finance the reservoir through a special purpose vehicle (SPV), which sits off-balance sheet to the individual stakeholders, meaning that the stakeholders are not underwriting the investments. This is the key benefit of the WASCO model, that financiers are not held liable or responsible for the investment. The SPV owns the water asset.

The SPV holds the core contractual arrangements with various parties, who, in effect, are subscribers to the water service. The service fee model has the benefit that there is not up-front, bulk payment, but it is maintained by regular payments from users. Landowners, for example, are acquainted with the idea of incrementally paying into a sinking fund for maintenance or regeneration of property assets. Retailers could also potentially build a line in the retailer-supplier contracts to ensure that a certain amount of money, per unit of produce purchased, be rewired into the SPV. Farmers could pay a baseline service fee coupled with a pay-as-you-go water usage fee.

4.4.1 The benefits

The key benefit of Finance Model 4 is that it can include a wide range of potential investors, not only those directly benefiting from the reservoir. It can be envisaged that the SPV could issue water-catchment bonds which could be bought by various parties.

Another benefit is that the SPV model does not require any direct reservoir stakeholders to make up-front bulk investments. As it is able to source and attract capital from a broad investor base, the direct beneficiaries of the water asset can resort to long term incremental payments for the water services. In essence, the model transforms large upfront investments into incremental finance streams.

4.4.2 The barriers

The off-balance sheet SPV structure is often used in project finance for investments in energy infrastructure. A major challenge to the model is the contractual and legal complexity of establishing the SPV and the binding relationships between stakeholders. As the SPV is off-balance sheet to all stakeholders, only the cash flow from the SPV serves as collateral for the investment. Therefore, clarity around the amount of revenue that can be generated from the water asset is required. The allocation of water resources as well as the benefits to each stakeholder also needs to be determined. Often in energy projects, the transaction costs of setting up an SPV structure can amount to 20% of the total upfront cost of the project; therefore using the WASCO for the Wissey storage options would have significant cost implications.

A key factor to enable the success of the WASCO model is to achieve adequate water trading between WASCO stakeholders or other potential WASCOs. In effect, the WASCO is an alternative water company which provides cross-sector water services. In this respect, the institutional environment needs

21 Crawford-Brown Doug; Gosse Jean-Baptiste, "New Approaches to Water Stewardship: The Sustainable Water Finance Project", 2013.

to support water trading, and furthermore, WASCOs need to be integrated into the system, which is currently still dominated by regulated monopoly water companies. This is as much a challenge for WASCOs to work alongside traditional water companies as it is for regulators to enable a market for new entrants and to develop supporting institutional regimes.

Another challenge to the model is for WASCOs to develop the appropriate expertise to deliver the water services. The question remains how effective and efficient would WASCOs be compared to water companies which already have had decades of experience in the area, and already have existing infrastructure in place to support the new investments and deliver the water services. Despite this, compared to the other financing models, the WASCO model provides the most open platform for multi-sector collaborations.

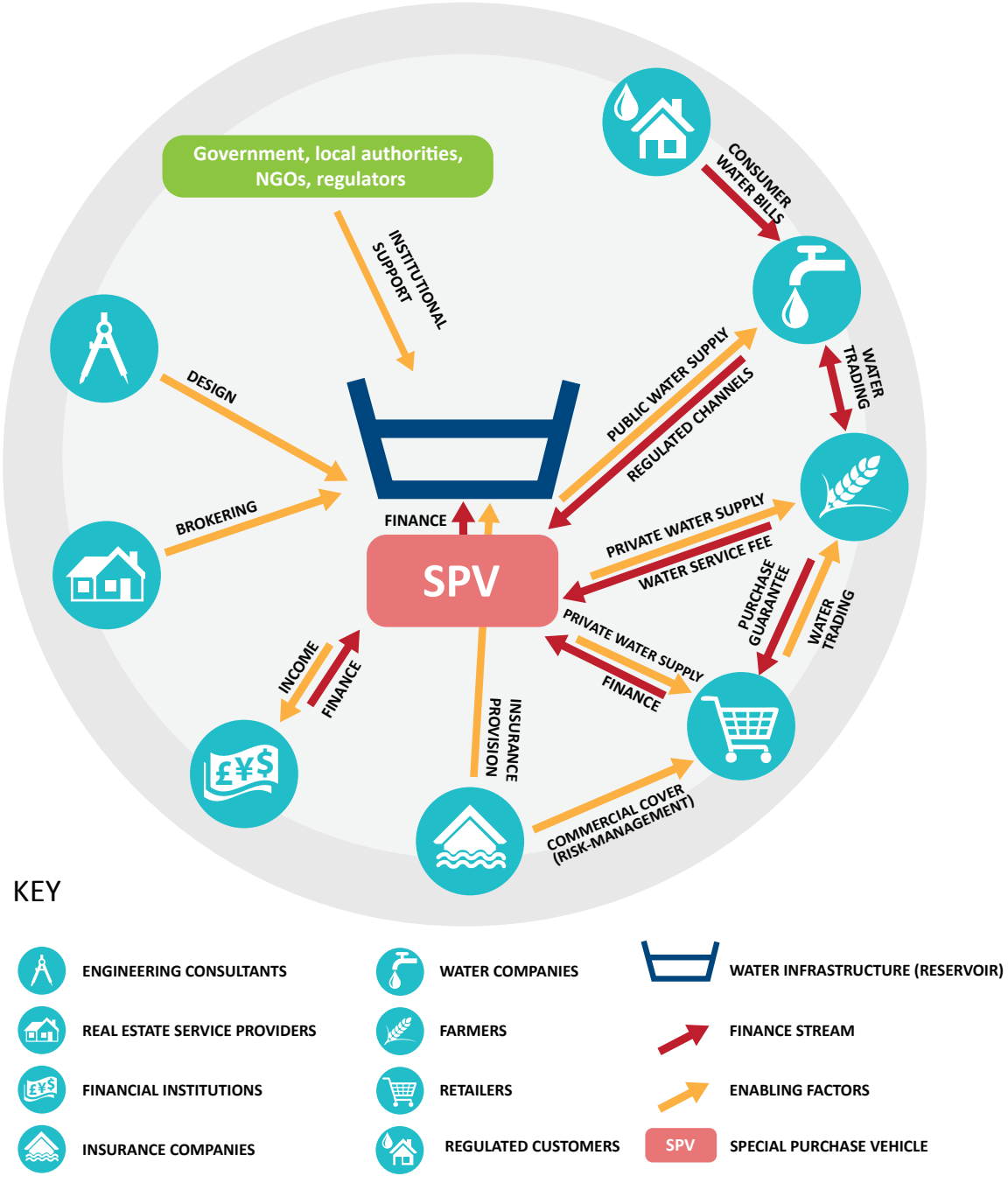

Figure 15 Finance Model 4

5 Framework for a collaborative approach

The financing of the Wissey water storage options is one example of an investment in a multi-sector water asset. The water reservoirs provide both clear income streams via the provision of water and opportunities to explore alternative financing channels. The financing models that have been suggested are not restricted to reservoir investments; they can be adapted and scaled up to investment in other water services.

The Wissey project sheds light on the core ethos of a multi-sector collaborative approach. A multi-sector approach expands beyond the direct beneficiaries of water users, providers and asset owners to other parties with interests in water (Figure 16).

Financing models are the foundation upon which stakeholders' interests are connected in a collaborative water approach. Stakeholders are linked through income and finance streams which form various financing models. Defining the income stream is very much about how to value the solution and collectivise the benefits of the water investment.

The process of developing a financing model is shown in Figure 17. After identifying the stakeholders and the contractual relationships, it is important to explore the business case for different sectors and to assess the benefit streams. Building financing mechanisms requires the bringing together of income and finance streams. The financing models can then be tested in a particular case study to understand the necessary governance structure and regulatory support that is required.

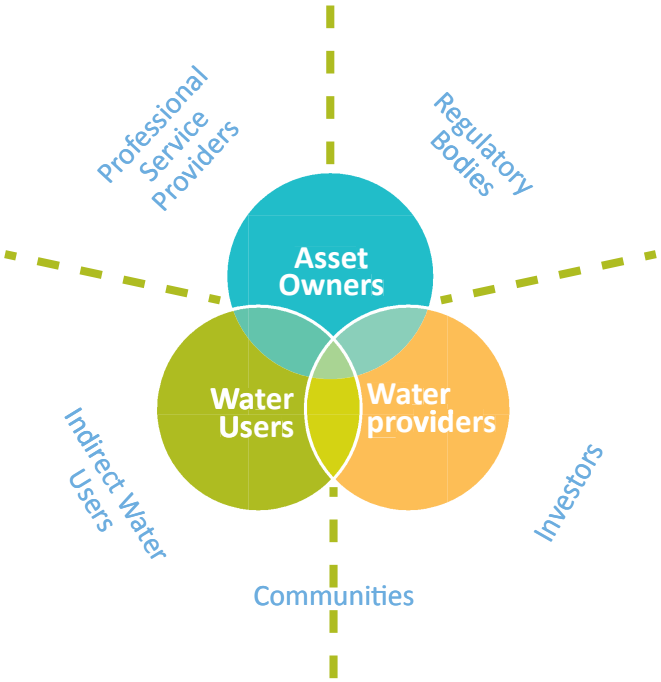

Figure 16 Framework for a multi-sector collaborative approach

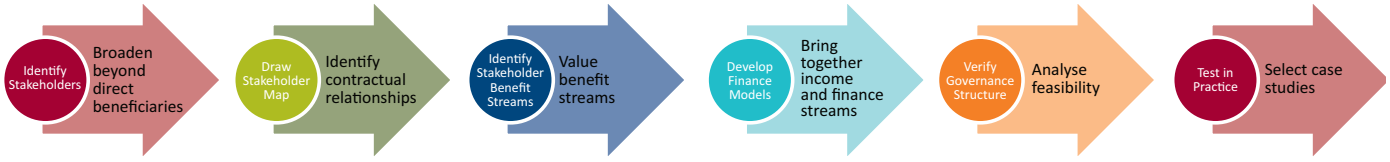

Figure 17 Process for developing a multi-sector collaborative water investment approach

6 Championing a business-led approach

In the UK, businesses are faced with increasing pressure of water scarcity caused by growth, climate change and sustainability reductions. It is imperative for businesses to develop greater resilience against water scarcity and to undertake robust planning and investments in additional water assets that mitigate long-term supply-demand risk. Collaborating through a multi-sector approach can unlock innovative financing models which consider different ways of using the existing and new finance channels to address the water asset investment challenges.

Current single-sector water asset investment models undertaken by water companies do not create cross-sector guarantees for water security. A multi-sector approach can provide a secure water supply for different sectors, who have both a direct and indirect dependency upon water, and thus create long-term resilience to water scarcity.

The Sink or Swim Collaboratory unravelled the value of water to different sectors and scrutinised various income and finance streams; this resulted in four financial models for a multi-sector water project.

Whilst a multi-sector financing model champions a business-led approach, it must be acknowledged that opening up the water investment landscape needs a careful step-by-step approach which requires regulatory guidance. Government maintains the largest control over water resource development and allocation; it will therefore play a crucial role in facilitating a multi-sector approach to unlocking private investments in unregulated water activities.

The time is now right for businesses and government to work together to address the increasing demand for water resources. This Collaboratory has opened the door for business to build coherent water investment and management strategies with government to generate a secure supply of water which will create resilience and reduce risks across multiple sectors.

International implications

The risks of water scarcity, for both direct and indirect users, are challenges that are not unique to the UK; many companies are grappling with these issues around the world, particularly in drought prone areas in developing and emerging economies. The multi-sector, collaborative approach to implementing solutions through new financing models can be applied beyond the UK. This is an important component of CISL's Natural Capital Leaders Platform's 'Action Research Collaboratories' (ARCs). These build links between business, academics, investors and other stakeholders. The ARCs provide business with a range of evidence-based operation and supply chain interventions to reduce long-term business risk.

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Over 25 years, we have developed a leadership network with more than 5,000 alumni from leading global organisations and an expert team of Fellows, Senior Associates and staff.

HRH The Prince of Wales is the patron of CISL and has inspired and supported many of our initiatives.

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