EXECUTIVE SUMMARY

Introduction

This research explores how wider participation in **Payment for Ecosystem Services (PES)** schemes might be encouraged, with a focus on two groups of beneficiaries: business sectors with dependencies on natural capital and ecosystem services; and local authorities who might be in a position to procure ecosystem services on behalf of local residents and businesses. This study has utilised literature reviews and interviews with business sector and local authority representatives in order to establish the 'business case' for PES, the potential role of local authorities in PES scheme development, and action plans setting out ways by which uptake of PES might be supported future.

Following the profiling of all UKSIC manufacturing sectors, the three priority business sectors selected for detailed investigation were beverage manufacturers, food manufacturers, and heavy water users in the form of the chemical and paper manufacturing sectors. A range of local authorities were also engaged, including representatives from urban and rural authorities.

Business cases and action plans

For **Beverage manufacturers**, reliable, high-quality water resources were seen as presenting strong PES opportunities for this heavily water reliant sector. This is reflected in the existence of a number of beverage sector-related Payments for Watershed Services internationally. Securing reliable agricultural supplies and ethical demands from the market could also be drivers towards action. However, despite voluntary progress by a minority of companies, there was overall a perceived lack of regulatory or market pressures to take greater responsibility for supply chain issues. The open nature of markets, particularly complex price-sensitive global supply chains, often obscures beverage manufacturers' environmental impacts and dependencies and reduces accountability for product footprints, so limiting consideration of PES opportunities. Price remains the primary driver in the beverage sector, and so environmental impacts and opportunities will need to be reflected in economic terms if a robust business case for PES is to be made. As a further observation, awareness of PES appears rudimentary amongst many beverage manufacturers.

Consequently, the **Beverage sector PES Action Plan** comprises a range of higher-priority measures including: providing information on how PES can be used to better manage business relevant environmental risks and opportunities; and further focus on beverage manufacturers with the highest short-term potential for PES uptake due to short supply chains, immediate water issues or stakeholder pressure for change. It was also considered important to support PES pilots where opportunities exist to demonstrate the business case for action within the sector, so supporting cross-sector learning and business confidence in PES.

For **Food manufacturers**, the strongest opportunities for PES uptake may be amongst businesses with integrated agricultural production (i.e. they own farms which produce their raw materials), or where there are dedicated, short supply chains for certain ingredients (particularly those that are not readily transportable or produced in restricted regions). Water use in the food manufacturing sector also presents some sub-sectors with specific opportunities to explore PES, as might opportunities to enter ethical markets where positive management of environmental risks is a prerequisite. Once again, low awareness of PES and the opportunities it presents is an obstacle to uptake, as is the open, substitutable and generally unaccountable nature of supply chains. 'Free rider' concerns also may inhibit some companies from investing in PES as a means of sound supply chain stewardship. The policy environment was found to focus mainly on the sustainability of manufacturing practices rather than wider product footprints.

The **Food sector PES Action Plan** comprises a range of higher-priority measures such as: facilitation of partnerships between NGOs with PES experience and food manufacturers; promoting the role of Government bodies as trusted intermediaries to broker partnerships between multiple PES actors; informing the food sector about risks and opportunities for which PES may provide part of a solution; and funding of work necessary to accredit generic PES mechanisms. Further key measures include co-ordinating a catalogue of PES opportunities nationally and support for PES Pilots to demonstrate how such schemes can deliver benefits within the sector.

For the **Chemical and paper manufacturing sector**, there is a strong reliance on water in both sectors with large quantities abstracted, in addition to heavy use of mains water. As such, there may be the potential for catchment-level PES focused on security of water supply to develop in these sectors. Abstracted water is however perceived as being low cost by the industry. In addition to water, there are some further localised dependencies that could provide a basis for PES, including protection from floods. Nonetheless, the sectors' tend to focus on onsite efficiencies, despite growing threats from ecosystem service deterioration in the wider environment (although trade bodies are starting to focus to a greater extent on these issues). Some chemical companies have also taken up the use of green infrastructure, including in the wider landscape. Finally, whilst there was some general awareness of PES, the concept still needs to be further communicated.

The **Chemical and paper manufacturing sector PES Action Plan** comprises a range of higher-priority measures including exploring through research the barriers and opportunities associated with water-based, catchment-scale PES in these sectors (including investigating how catchment-level partnerships might be formed and further development of the Catchment Based Approach). Investigating wider dependencies and impacts through further research was also suggested for instance by considering where fixed assets under threat of flood risk could be defended. A lack of sector specific examples of PES could also be addressed though PES pilots.

Potential role of Local Authorities in PES scheme development

The research found that **Local Authorities** appear more likely to be engaged in PES or PES-type projects as intermediaries/brokers or sellers than as buyers on behalf of local communities and businesses. Notwithstanding the above, there may be some scope for local authorities to act as buyers with regard to flood risk mitigation and air quality improvement, given the responsibilities placed on local authorities to address these issues and the possible threat of EU fines for poor air quality being passed down to LAs It is also still early days for public health within local authorities, but there are already examples of public health officers exploring the links between environment and health as part of addressing the 'wider determinants of health'. Meanwhile, whilst LEPs are primarily focused on economic growth, there are suggestions that they are starting to become aware that quality of environment leads to increased investment and job creation.

The **Local Authorities PES Action Plan** sets out a number of measures, including the need to engage with public health officers, and other related bodies (e.g. NHS and Public Health England) in order to explore the scope for PES focused on health and the environment. It is also considered important to raise awareness of PES and its potential benefits amongst senior Local Authority staff. Government could also encourage LEPs to more actively consider the links between ecosystem services and resilient growth, including guidance on PES targeted specifically at a LEP audience. Investigating further the scope for local authorities to act as 'buyers' in the highest potential areas, namely flood risk mitigation and air quality improvement, is also identified as an action.

Discussion – Targeting business beneficiaries

An examination of the evidence and actions reveals a number of broad areas of action that cut across multiple manufacturing business sectors. Of these, it is considered particularly important to:

- **Increase awareness, understanding, and confidence in the PES concept** – It is unlikely that PES will gain traction in the manufacturing sectors without decision makers having a clear understanding of their sector's dependencies on ecosystem services; that PES is available as means of securing flows of services; and how they can bring a PES scheme into being. In light of this, we suggest the development of a knowledge exchange strategy for PES, for example making use of existing institutions (e.g. the Ecosystems Knowledge Network) to communicate the PES concept and business case to manufacturing sector trade bodies and decision makers.
- **Undertake further detailed research into specific businesses with high dependencies** – The first step in creating a successful PES scheme is to identify a saleable ecosystem service and prospective buyers and sellers. As such, it will be necessary to establish who and where potential PES beneficiaries are within particular priority areas in order to effectively target support and encourage the development of partnerships amongst businesses (e.g. when acting at the catchment scale to secure water supplies). Such 'beneficiary mapping' and engagement exercises could target the key dependencies identified in this study.
- **Establish PES pilots to support business confidence in PES** – There is a need to develop more sector-specific examples of PES in action, and so increase awareness, understanding and confidence in the PES concept. In particular these should show how the key opportunities identified through this study and further detailed analysis and mapping could be realised.

Conclusions

This research has uncovered a variety of sectors with the potential to benefit from the uptake of PES. In particular, it has focused on beverage manufacturing, food manufacturing, and heavy water users in the form of chemical and paper manufacturing sectors as a result of their close dependencies on ecosystem services. The current readiness of these sectors to benefit from the application of PES appears however to be limited and the business case for them to engage still needs to be developed and demonstrated. No 'easy wins' akin to the major programmes already being taken by the water industry were identified. However, the research does reveal potential for specific businesses in these sectors to engage and there are a few emerging examples of sector engagement with PES schemes which highlight areas of potential future opportunity.

To improve this situation, we have identified three high priority areas for action. Firstly, it will be crucial to raise awareness of the PES concept amongst decision makers in these sectors. PES was often not clearly understood by businesses and without this understanding it is clear that PES scheme development is highly unlikely. Communicating the key successes and lessons learnt from PES schemes undertaken to date should form a part of a knowledge exchange strategy for PES that is designed to address this deficit. However, to clearly make the business case for PES it will be important to undertake a series of pilots that bring to life the concept and make clear its potential benefits. To support the development of these pilots and wider roll out of PES, it will also be vital to build on this study by establishing who and where potential PES beneficiaries are within particular priority areas, so allowing targeted engagement and partnership building.

In terms of the Local Authority focused element of this study, this research has revealed limited opportunities for formal PES schemes involving LAs at this time, particularly where LAs act as 'buyers'. Examples of LAs acting as intermediaries/brokers or sellers in PES or PES-type projects were identified, but no instances of LAs acting as PES buyers were recorded. To address this it will be important to investigate further the scope for LAs to act as buyers of ecosystem services in the highest potential areas (namely flood risk mitigation and air quality improvements). Another potential area of opportunity is the link between health and the environment, with a need identified to engage with public health services within LAs, as well as the NHS and Public Health England, on the potential for health-focused PES scheme development. Engagement with senior LA decision makers and LEPs will also be required to raise awareness of PES and how it can be used in practice.