INDUSTRY COMMENT

PES IN THE NETWORK SOCIETY

The benefits of scaling up Payment for Ecosystem Services markets outweigh the risks. PyTerra's David Arscott looks at how PES is coming of age and suggests how the next big step can be taken.

David Arscott is founder and director of water innovation company PyTerra.
d.arscott@pyterra.co.uk

When you saw arguments between journalists in the Guardian (George Monbiot v Tony Juniper, 2012) over the validity of Payment for Ecosystem Services (PES), you got a sense that there was something more interesting going on than first met the eye.

Since then, there has developed a growing volume of evidence to suggest that PES works. There is still a dream amongst PES visionaries to see it as an instrument for facilitating the transition to a green economy. In reality, it has often become a tool for conservationists, implementing important stewardship schemes but not necessarily tapping into the valuable economic services which natural capital can provide.

A typical example of PES in the UK is the ongoing scheme in the Tamar catchment to improve water quality. Here, South West Water acted as buyer and multiple farmers acted as sellers with an intermediary bringing the two together. The scheme plans to distribute over £1.2 million of investment.

There are also examples where economic value has been the driver. For example, the Woodland Trust undertook a Defra pilot project at Smithhills near Bolton in 2014-15. By using social and private micro-enterprises, it created an enterprise catalyst to mobilise natural capital in a city fringe landscape for the benefit of local people. However, it concluded that there remains a barrier to rolling out this concept more broadly to city fringes because city public and private institutions do not see this as part of their sphere of activity.

Scaling up

From these pilots, challenges to the success of PES were identified by the Ecosystem Knowledge Network (Feb, 2015), including: a lack of market pricing, lack of knowledge of intervention options and limited understanding of their value by user groups. The challenge, therefore, is to move beyond PES as mainly a conservationist activity initiated on a scheme by scheme basis, through to becoming an economic catalyst at scale which can work across any catchment type with access to a robust pricing model which reflects the real value that services can deliver.

What needs to happen next?

In the UK, PES trading schemes are being developed by a number of organisations: Green Alliance ('New Markets for Land and Nature'); Albion Water in a joint venture with Wessex Water; and an EU funded 'Results-Based Agri-environment Payment Scheme' pilot study in North Yorkshire, Norfolk and Suffolk. Schemes by RSPB, National Trust, and River Trusts are being rolled out and there are probably few water companies who are not currently considering some form of PES. A UK/French consortium focusing on water quality, anticipates Interreg funding soon for pilot studies across six catchments, where some 90 farms/land managers and 18 buyers will be targeted. Water company involvement will come from Southern Water, Portsmouth Water, Agence de L'Eau and Eau de Paris.

The size of the PES market is undoubtedly growing. Governments, water utilities, companies, and communities around the world paid nearly US$25 billion in 2015 for nature-based solutions to secure reliable access to clean water (Forest Trends, 2016). Within this review, the organisation 'Alliances for Green Infrastructure' tracks the growing popularity of a holistic water management approach that combines engineered 'grey infrastructure' with 'green infrastructure'. More on this later.

The total investment potential in the conservation market is US$200 - 400 billion between now and 2020 (Credit Suisse AG and McKinsey Centre for Business and Environment, 2016). However, scalability is one of the key concerns in growing this market. Currently, only a few projects are scalable beyond a US$5 million threshold. This results in high transaction costs driven by a larger number of heterogeneous transactions that need to be bundled to reach scale. New methods are emerging to operationally scale up by leveraging local banks, cooperatives or regional/national conservation trust funds as intermediaries.

One way scale can more easily be achieved is if a PES market trades in more 'grey-green' schemes. For example, this might include transactions with industrials or mining concerns to temporarily change processes at critical times to improve the health of a river. But this creates a possible dilemma: if industrial processes creep into the trading mix, can such trading really come under PES? This is an important distinction because a 'grey-green' scheme may not be eligible for green investments and may be treated differently by regulation, grant funding and taxation in different countries.

Extending PES into 'grey' catchment activities could have some exciting consequences. A group of industrials might work together to, say, process wastewater if PES trading tips the balance on investment. There might then also be things that their supply chains can do, all wrapped up into single agreements. This could also support trans-catchment trading, say by a brewery to support its growers. Furthermore, such a market can also link into other markets, for example energy or even transport.

Put all these marginal contributions together and then you can see a significant positive impact being made throughout a catchment economy. Whether it is the River Lea running into London, or the Mithi River flowing into Mumbai, there are many opportunities to increase the scope of activity.

Network thinking

Exploring this question of how infrastructure can be delivered at scale in the 21st century highlights many societal challenges facing the evolution of thinking from 'post-industrial society' (Bell) to 'network society' (Castells – systems which support flexibility, individuality and innovation). Established structures across government and industry influence how infrastructure is developed. The old ways throw up many examples where it has taken perhaps 20 years to deliver major infrastructure projects, and then only to find the original design criteria are incapable of addressing new needs and conditions.

'Network thinking' may offer an approach which allows PES to be rolled out at scale through smaller, networked, distributed solutions. The International Centre for Infrastructure Futures (ICIF) recently showcased its research into a systems approach to infrastructure development. Fully formed PES markets by their nature comprise systems which create a many-to-many relationship between upstream service providers and downstream buyers. Such systems create resilience and flexibility of supply for downstream players.

PES markets are not just capable of generating additional revenues through increased scope and scale, but can also attract new investment to encourage upstream players to develop new infrastructure for PES services. This financial activity then creates a ripple effect through the catchment economy. It supports the argument by some that only business can create large scale resources for environmental benefit when they can meet a need at a profit. This profit allows the solution to be infinitely scaled and become self-sustaining.

Also, creating PES markets which can attract investment will be critical if scale is to be achieved. Intermediaries may need to provide suitable access points for funds and this means developing intermediary models which could sustain this role.

'Network thinking' also requires support from appropriate technology. Exciting new developments in distributed ledger technology (e.g. blockchain) can provide this, allowing thousands of transactions to be made safely without the need for a financial intermediary. The ledger itself can also be programmed to trigger transactions automatically, creating 'smart contracts' between upstream and downstream players. Add to this the power of the Internet of Things, where a network of local hydraulic devices, for example, can be operated automatically on the instruction of a smart contract every time an upstream service is needed. The UK-based PyTerra consortium is developing such a system.

Stakeholder impact

The next big step for PES in the UK is to run a market at scale across a catchment by April 2020, just in time to take advantage of de-regulation of the wholesale water market. This can easily be started if the vision is there, funding is made available and the lessons from previous studies are adopted. This may require some decoupling of what happens on the ground to the trading system itself to allow multiple future schemes to be plugged in easily and cost effectively.

How might the development of scaled-up PES markets impact on key catchment stakeholders?

- *Water companies: PES offers an opportunity to address water quality, availability and Water Framework Directive targets, as a number of companies already appreciate through their upstream farming agreements. However, scaling up would mean they lose direct control of some services, which creates a dilemma in view of their statutory supply duties. Nevertheless, Ofwat has made it clear that it is supportive of new water resource markets working on a commercial basis so long as involvement remains within the costs allowed for water companies to deliver their outcomes. This is a call for water companies to be bold and innovative in their PR19 negotiations, otherwise this might be an opportunity left for others to take up.*
- *Government agencies: The Environment Agency and Natural England may well approach scaled-up PES markets with caution. At stake may be the principle of the polluter pays, bedrock of the EU Water Framework Directive. Regulatory bodies may be concerned that farming practices particularly could position themselves to attract additional payments rather than deal with environmental issues under current obligations. Furthermore, their strategic role could also be jeopardised if solutions become market-led rather than evolve out of catchment strategies. On the other hand, a scaled-up PES market could offer extensive data feedback as well as the ability to see government objectives met through non-government funding, especially if overseen by an appropriate intermediary.*
- *LEPs: In their role to promote economic growth and jobs, they should welcome the prospect of a system which helps to take water-related risks away from business and helps to promote catchment economies. As more government funds are devolved to LEPs, this provides an opportunity to channel funds into green services and infrastructure through intermediaries within PES markets.*
- *Local government: Where PES markets can bring wide-ranging benefits to communities, local government could levy taxes to invest into green services and infrastructure. Furthermore, s.106 agreements and particularly Community Infrastructure Levy payments from local developments could be channelled into the same investment pot. Biodiversity offsetting arranged at the planning stage could also be integrated.*

> **For those who think this is not a good time, it helps to think about the risk and cost of doing too little, too late.**

Environmental impact

Finally, in the age which has seen the Ganges and Yamuna rivers bestowed with the same legal rights as human beings, how does the natural environment fare in this push for bigger and broader PES markets? Defra's 2013 'PES: Best Practice Guide' talks about the need to avoid environmental 'leakage', whereby securing an ecosystem service in one location leads to the loss or degradation of ecosystem services elsewhere.

Another environmental concern might be the commercial incentive to change upstream habitats in order to, for example, replace diverse agricultural systems with monocrops. These concerns are balanced by data transparency which will highlight negative impacts so that regulators step in, investors pull out and they become targets of public campaigns. Strong governance will be key and here the role of intermediaries offers exciting possibilities.

The Natural Capital Committee's 'Fourth State of Natural Capital Report' (2017), makes a series of recommendations to government on developing its 25 year environment plan. It states: "The next two years will determine whether observed declines in natural capital are being reversed and whether the great benefits from enhancing our natural capital to people and businesses are realised, in terms of: better health; educational opportunities; recreation; tourism; sustainable supply chains; better carbon retention and sequestration; better catchment management and natural flood protection; better soils; enhanced, accessible landscapes; and more biodiversity. To fail to grasp these opportunities is to condemn us to a lower sustainable economic growth rate."

This challenge calls for key stakeholders to take risks. For those who think this is not a good time, it helps to think about the risk and cost of doing too little, too late.