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Nuffield scholar Sam Archer has plans for a national 'environmental stock exchange' where water utilities buy credits in riverbank restoration to offset water pollution and businesses pay for biodiversity credits as part of their 'green' branding.

ENVIRONMENTAL STOCK EXCHANGE PROPOSED TO PROTECT ECOSYSTEMS

By Catherine Norwood

Nuffield Scholar Sam Archer is developing a proposal for a national 'environmental stock exchange' that will allow farmers to trade not just carbon credits, but credits for work they undertake to improve soil health, air and water quality, manage salinity and increase biodiversity.

Sam, a farmer from Gundagai in southern NSW, was last year awarded a Nuffield Scholarship and spent four months travelling internationally to investigate how other countries manage their ecosystem service schemes and how they attract private investment.

Throughout his Nuffield Scholarship Sam focused on examples of voluntary schemes funded by the private sector or on a 'customer-pays' basis. He also looked for examples that achieved balanced outcomes – where farming continued on productive land, while marginally productive land was used for environmental goods and services.

"Creating markets for the services that a healthy environment provides – like clean air and water – will require a framework to identify tangible cost/benefits, backed by good science, good economics, good policy and the goodwill of participants," Sam says. "I don't think governments will be able to bear the full cost of a national stewardship scheme. To protect and maintain productive and resilient ecosystems in Australia we will require investment from other sources."

Sam has already initiated a meeting in conjunction with the Australian National University's Climate Change Institute to discuss his proposal for a national scheme. The meeting, in August, will



Geoff Coates, Operation Bumblebee (OBB) Project Manager in England says bumblebees are a critical pollinator species, threatened by habitat decline. (Photo from Syngenta)

involve scientists, environmentalists, government agencies, farmers and indigenous representatives. Sam's proposal includes a pilot project, based mostly in the ACT but extending into NSW, that focuses on water quality and maintaining some of the iconic vegetation types in the region.

Farmers and New York City's water supply

One of the best examples he found of market investment in ecosystem services during his Nuffield travels was in New York State's Catskill Mountains, where 300 farmers are responsible for maintaining water quality for New York City's nine million residents.

"In the 1990s New York City was faced with the prospect of building a \$US8 billion water treatment plant to address declining water quality, with daily operating costs of \$US1 million," Sam says. "Instead, farmers in the catchment participate in a voluntary environmental stewardship scheme. They collectively receive \$US7 million in annual payments to undertake additional land management practices that minimise nutrient runoff and help deliver safe drinking water for the city."

The project has also provided additional benefits for the region, with a 'Pure Catskills' food marketing campaign and increased tourism.

In England Sam visited farmers taking part in Operation Bumblebee, aimed at reversing bumblebee decline which



Nuffield Scholar Sam Archer from Gundagai, NSW, believes Australia needs to develop markets to generate private investment in preserving ecosystems.

the assistance of the GRDC, investigates recent advances in international grains R&D.



Bumblebee pollen and nectar mix planted on field margins, leaving productive farmland for high yielding crops.

is a significant threat to crop pollination. An initiative of the agrichemical company Syngenta, with recent support from the supermarket chain Sainsbury's, farmers receive an annual payment of £450 per hectare for voluntarily planting a bumblebee pollen and nectar mix of clover and wildflowers. This initiative is helping to maintain bumblebee numbers and agricultural productivity across 25 per cent of England's arable land. The program has been so successful it is being trialled in Europe.

Australia needs to increase rigour

Sam says both the Catskills and bumblebee programs are based on sound science and measurable outcomes. Australian initiatives, by comparison, often lack the scientific and economic rigour that are vital in determining the cost/benefit of the programs and attracting private investment, he says.

"For instance, some programs have provided incentives to fence remnant vegetation. Despite the aim of protecting the remnant, there is little accountability for the long-term management and survival of these vegetation communities – just for the fence."

Sam says an annual payment based on performance, as part



New York Watershed Agricultural Council – Catskills is a farmer initiated watershed and riparian management to deliver safe drinking water for New York City.



Changed livestock management in sensitive riparian areas to deliver safe drinking water for New York City. Note the cattle now walking over the stream rather than through it and well timbered hills higher in the landscape.

of a biodiversity credit scheme, would provide much greater accountability and biodiversity.

What a national market would look like

His vision for a national market would see it operate similar to a stock exchange. Credits would be traded for different ecosystem services, be they water quality, biodiversity, carbon storage or salinity mitigation. The market would determine the price – some credits would be worth more than others because of the assessed ecosystem benefits they produce. Businesses might trade to offset higher alternate compliance costs – as in the case of New York City, or as with Sainsbury's in the UK – as part of their 'green' branding, to meet consumer expectations.

Sam says biodiversity is a challenging ecosystem service to define and develop credits for, although there are a number of ways to attract private investment. Mitigation banking is a market mechanism well established in the US, which has emerged in Australia, principally in NSW as 'biobanking'. Where governments have a policy of 'no net loss', any ecosystem removed by property or infrastructure development must be offset (mitigated) by permanently preserving a similar ecosystem of equal ecological value. Sam says mitigation credits could be offered through a national trading scheme although trades are more likely for coastal ecosystems where most development is occurring.

Environmental fund managers are also potential market participants, possibly buying properties to preserve remnant vegetation. This would generate income from the lease of land for farming, as well as earn biobanking income from the remnant vegetation and capital growth on the entire property.

Sam acknowledges that he is still developing his proposal and there are plenty of details yet to be worked out, but says the aim is to be proactive in creating healthier, more resilient ecosystems and communities in rural and regional Australia.

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Sam's Nuffield Scholarship was sponsored by Meat and Livestock Australia (MLA).**