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South Atlantic Overseas Territories Natural Capital Assessment: St Helena Process

ENVIRONMENTAL RESEARCH INSTITUTE
SOUTH ATLANTIC

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Summary

The St Helena Natural Capital Assessment, funded by the FCO and administered by the UK's Joint Nature Conservation Committee, is being conducted by the South Atlantic Environmental Research Institute (SAERI). It is working with SHG and other key stakeholders to deliver a suite of ecosystem service valuations which will provide new evidence for future decision making and environmental management on the island.

Human wellbeing is dependent on the benefits – or ecosystem services – which we obtain from the natural environment such as food, fresh water, tourism, spirituality and protection from flooding and erosion. Yet these benefits and the trade-offs made between them are often not considered when economic decisions need to be made. Values – both monetary and non-monetary – can be assigned to these ecosystem services which allow us to make longer-term, more strategic, decisions about how to manage them both now and for future generations.

Background

The South Atlantic Natural Capital Assessment project has been introduced to St. Helena through a number of discussions and meetings over the past year, and St. Helena has been part of a regional project group.

Between 20th-27th January 2018 Ness Smith and Tara Pelembe, from SAERI, visited St Helena to introduce the South Atlantic Natural Capital Assessment Project more widely on island and discuss how an NCA approach could help to inform environmental decision making on the island. They met with a wide range of stakeholders including the Governor, Councillors and Government officials as well as farmers, NGOs and utility providers. This culminated in a full day meeting on Friday 26th January with key stakeholders at the Mantis Hotel to discuss the most important environmental benefits, and to prioritise what should be assessed within the project. The agreed focus for the assessment – as written by participants – is summarised in Table 1.

Table 1: Outputs from scoping consultation, January 2018

Project/question	# Votes
Drought mitigation: **• Economic valuation of a reservoir in Fisher's Valley to increase water storage x 10, to safeguard against drought versus other options – desalination. EIA, pros and cons.**	12
What is the cultural and heritage value of St Helena? (combined)	11
Waste Management: **• Economic valuation of existing landfill to drive commitment to increase design life against construction of a new site – and where? (Recycling)**	11
What is the value of the forestry & agricultural estates in terms of food security and other benefits? (combined)	8
What is the value of the Peaks National Park from an ecosystem services perspective?	7
What is the value to the visitor of a well-managed natural environment? How much would visitors be willing to pay for nature's products?	7

A St Helena advisory group has subsequently been established to help steer the work and members are listed in Table 2.

Table 2: Members of the St Helena NCA project advisory group

Name	Organisation	Position	Email
Mike Durnford	SHG EMD	Environmental Risk Management Section Manager	mike-durnford@enrd.gov.sh
Darren Duncan	SHG ANRD	Head of Agriculture and Natural Resources Division	darren-duncan@enrd.gov.sh
Barry Hubbard	Connect St Helena	Chief Executive Officer	Barry.Hubbard@connect.co.sh
Lourens Malan	SHG EMD	Terrestrial Team Manager Terrestrial Conservation Section	lourens-malan@enrd.gov.sh
Nicole Shamier	SHG CPPU	Government Economist	nicole.shamier@sainthelena.gov.sh
Shirley Wahler	SHG Education	Director, Department of Education	shirley.wahler@sainthelena.gov.sh
Derek Pedley	SHG ENRD	Head of Property	derek.pedley@sainthelena.gov.sh
Councillor Gavin Ellick	Legislative Council	Member of the Legislative Council	Councillor.Ellick@helanta.co.sh
Riana de Wet	SHG ENRD	Head of Planning & Building Control	riana.dewet@enrd.gov.sh
Kirsty Joshua	Enterprise St Helena	Quality, Systems & Information Manager	Kirsty.joshua@esh.co.sh
Helena Bennett	St H Tourism	Head of Tourism	helena.bennett@tourism.co.sh
Amy-Jayne Dutton	SHNT	Head of Conservation	amy-jayne.dutton@trust.org.sh

The following pages provide some background information and suggested approaches to deliver stakeholder priorities set out in Table 1.

General Approach

The outline plan is to develop a series of valuations (both monetary and non-monetary) for the Peaks National Park, agriculture and forestry estate, tourism and culture, which will feed into Bayesian networks (Annex 1). These networks will be developed with stakeholder input and linked to GIS so that value maps can be produced. Scenarios will be developed to enable stakeholders to explore spatially the effects of different decisions and/or scenarios on ecosystem service provision. Two Cost Benefit Analyses will also be conducted for the potential development of a new reservoir and for extending the life of the current land-fill site.

Process

Between 16th and 27th July a team of people from SAERI, JNCC, The University of Kent and New South Wales Government (Annex 2) will work together with SHG and other key stakeholders to rapidly advance the assessments. We have named this an 'econoblitz' – taking inspiration from the more commonly known bioblitz concept. There will be a plenary

meeting at the start and end of this fortnight to brief people and wrap-up the work. During the econoblitz we will collate and 'clean' data ready to start the valuation process, conduct the Horse Point Landfill Site and Fisher's Valley Cost Benefit Analyses (CBA) and develop the conceptual socio-ecological models (Figure 3) with which to build the Bayesian networks.

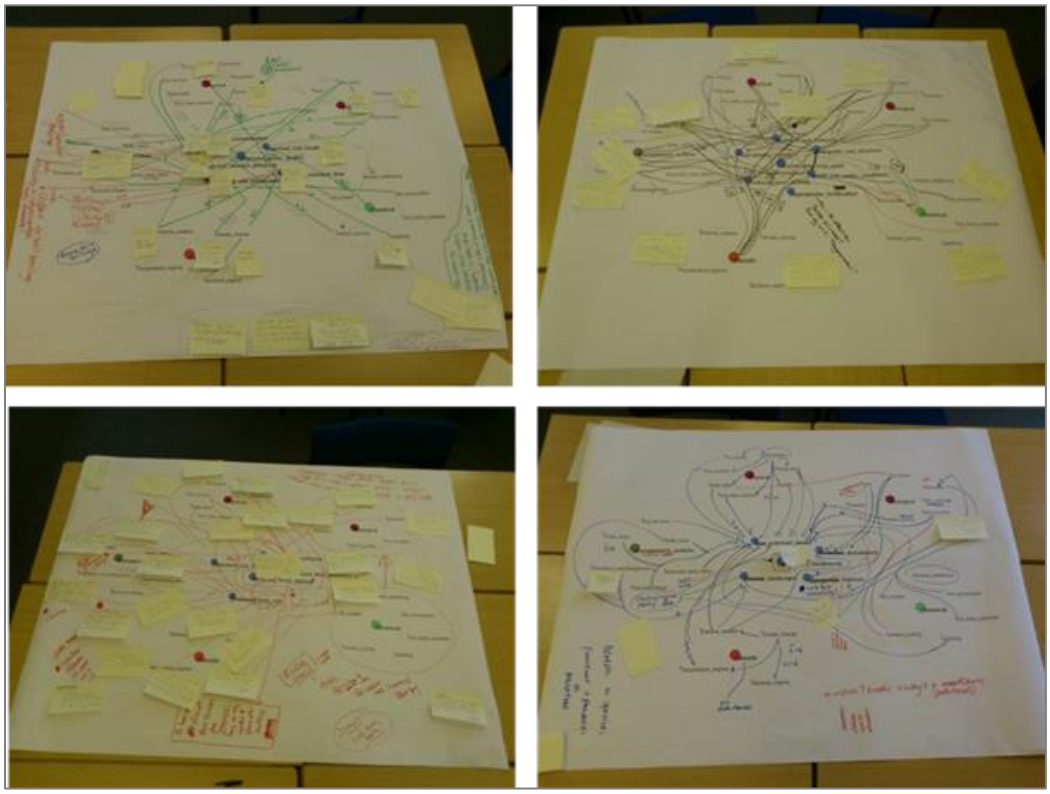

Figure 3: Examples of conceptual models, developed with stakeholders, to build Bayesian models.

The latter will be developed through a series of half-day workshops with a small number of key stakeholders for each assessment. During the econoblitz there will also be an opportunity to discuss, with Nick Conner, the possibility of setting up Natural Capital Accounts to sit alongside the Government's National Accounts.

To conduct the remaining valuations and develop the Bayesian networks we will recruit an external academic, Alistair McVittie from Scotland's Rural College (UK). He will not attend the econoblitz but will work closely with the wider team to develop methods. Further stakeholder input will be sought later in the year to parameterise (add probabilities to) the Bayesian networks and to develop scenarios to feed into the final models (Figure 4).

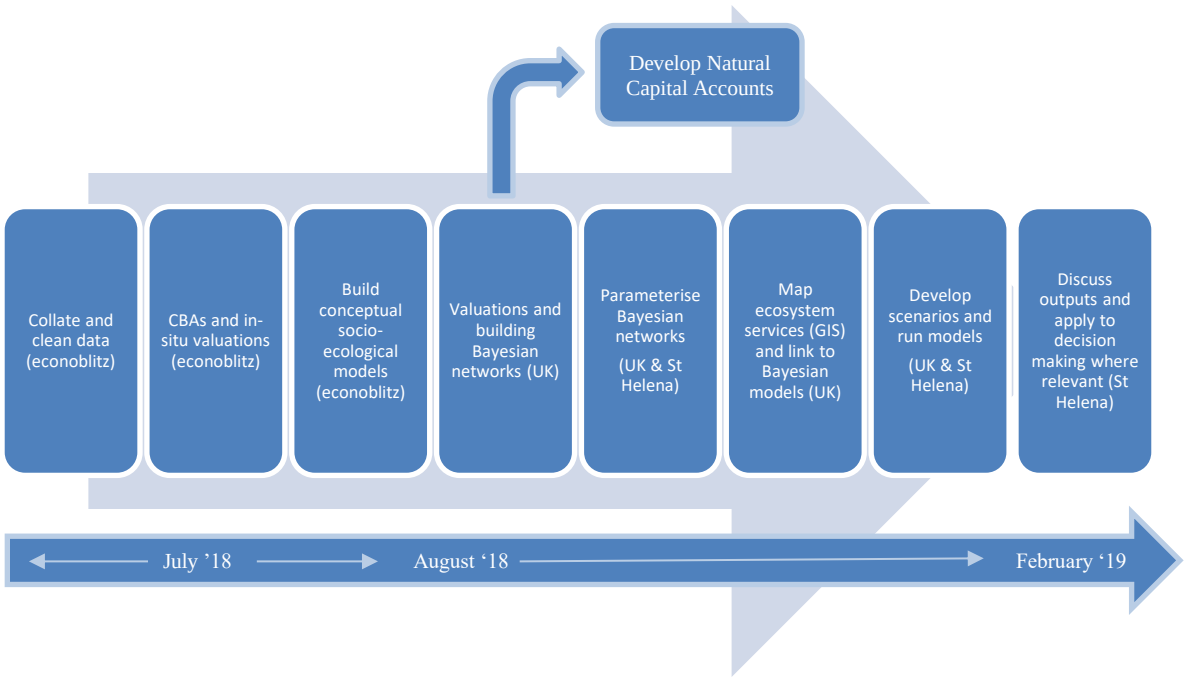

Figure 4: St Helena NCA process

Proposed valuations

The valuations conducted, both monetary and non-monetary, will depend on the data that are available and may change as work progresses. The scope however is set out below.

Peaks National Park

A series of valuations which will feed into the Bayesian network (and could inform Natural Capital Accounts):

- Recreation: Social media analysis.
- Tourism: Interviews with tour providers, social media analysis
- Cultural: cultural survey, participatory mapping
- Water provisioning: Avoided costs
- Erosion prevention: Avoided costs
- Genetic resource/medicine: Benefits transfer
- Carbon sequestration: Benefits transfer
- Flood regulation: Avoided cost
- Pollination: Production function
- Research/education: Number of school trips, research permits
- Biodiversity: Possibly Discrete Choice Experiment

Agriculture

A series of valuations which will feed into the Bayesian network (and could inform Natural Capital Accounts):

- Food: Market or production function value
- Cultural: Cultural survey, participatory mapping
- Tourism: Possibly social media analysis

- Health/wellbeing: Avoided costs

Forestry

A series of valuations which will feed into the Bayesian network (and could inform Natural Capital Accounts):

- Timber: Market or production function
- Recreation: Cultural survey, participatory mapping
- Carbon sequestration: Benefits transfer
- Flood regulation: Avoided costs
- Erosion prevention: Avoided costs

Tourism

Two analyses which will further inform tourism strategy, feed into the Bayesian network and which could be incorporated into Natural Capital Accounts:

- Value chain analysis
- Contingent Valuation Method surveys to better understand how much people are willing to pay to dive on St Helena and to snorkel with whale sharks. This information will provide *evidence* which *could* help to develop suitable pricing structures for tourists as numbers increase and demand outstrips supply and *could* also help to inform the development of a tourist charge to deliver sustainable financing for the MPA.

Cultural and heritage values

St Helena has a rich and diverse cultural heritage which will be captured through a survey building on the framework established by Rob Fish (University of Kent) for the UK NEA, NEAFO and in the Falkland Islands. The survey will include participatory mapping which, when combined with survey results, will produce a series of maps depicting how and where people value the environment of St Helena. A series of interactive creative walks will also be conducted with school children to capture what they value most about their environment.

Cost Benefit Analysis waste management

St Helena Waste Management and Recycling Options Assessment 2015 contains a comprehensive review of recycling options, including costs, which will provide a solid basis for a CBA of extending the life of HPLS versus creating a new site. Constraints mapping will be used to identify potential new sites, and an ecosystem services assessment of the most suitable site conducted to feed into the CBA.

Cost Benefit Analysis building a reservoir at Fisher's Brook

A full CBA of reservoir construction at Fisher's Valley. Potential ecosystem service assessments to feed into the CBA would include:

- Biodiversity value: Discrete choice experiment or benefits transfer.
- Provisioning: Market value of agricultural activities.

Alternatives to building the reservoir to be assessed include:

- Business as usual
- Desalination plant
- Transporting water between settlements
- Roof water collection/household storage tank systems
- Household water saving devices

Conclusions

This suite of valuations that have been identified locally should provide useful information to feed into decisions around these areas that need to be made in the future. We welcome the continued support and engagement in the project, and look forward to working together when we return to the island in July.

ANNEX 1: What is a Bayesian network?

Bayesian networks use mathematical probability principles to allow us to link the functioning of natural ecosystems through the delivery of ecosystem services to people, to the valuation those people put on the service delivery (Figure 1). The networks, when combined with GIS systems, allow stakeholders to explore the effects of decision making – or different scenarios – on the value and distribution of ecosystem services (Figure 2).

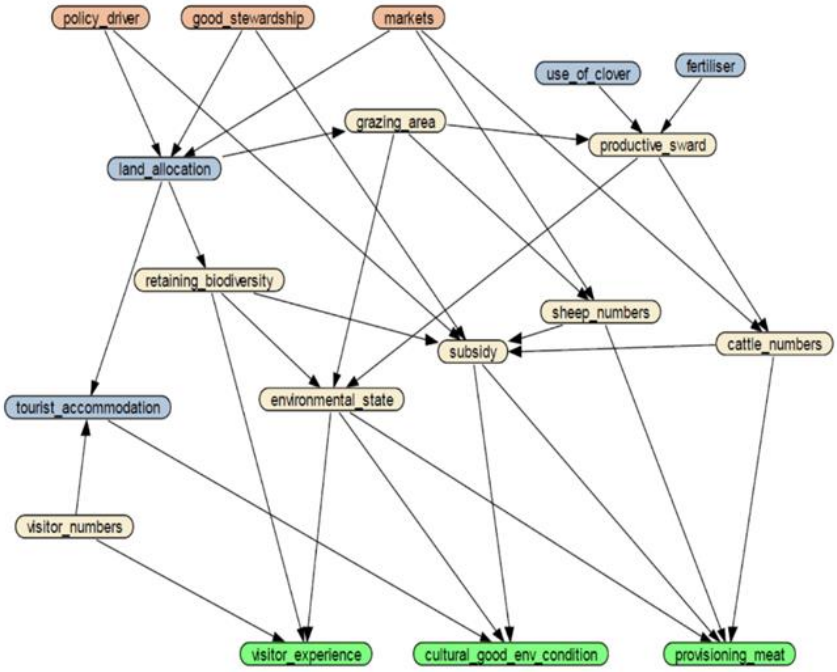

Figure 1: Bayesian network for UK farmland. Source: Smith et al (2016).

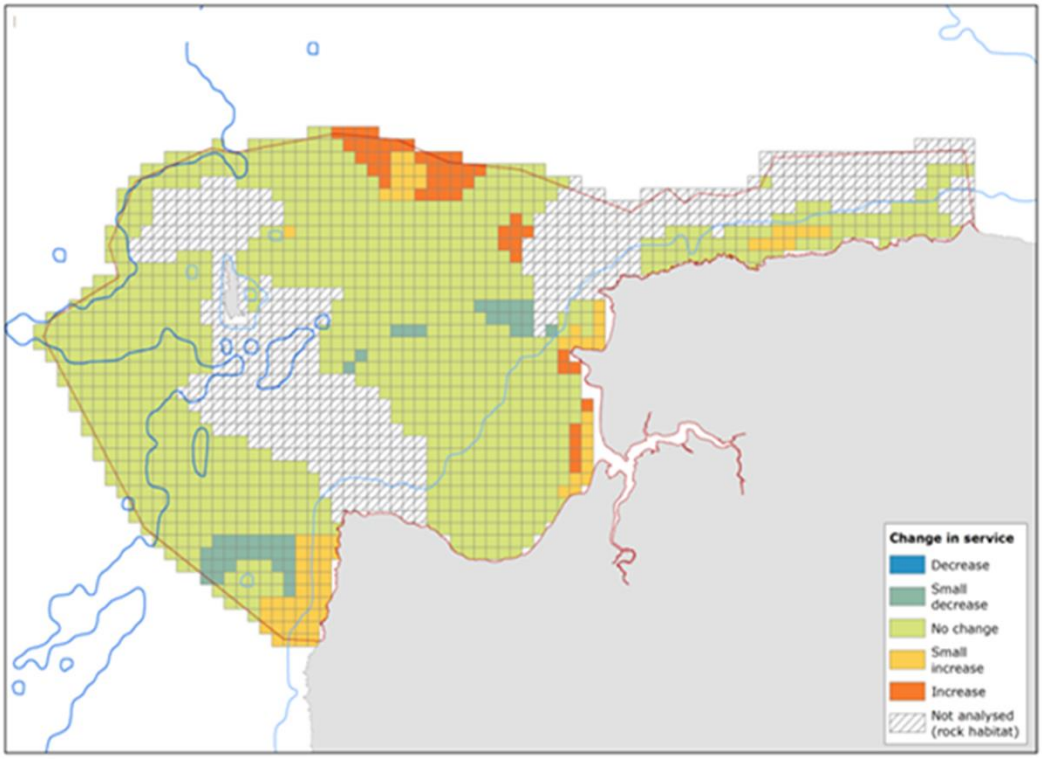

Figure 2: Map derived from a Bayesian network showing potential changes in ecosystem service provision as a result of designating a series of Marine Protected Areas in North Devon (UK).

Bayesian networks deal well with uncertainty, being able to incorporate qualitative and quantitative information, hard evidence and expert opinion. This means that stakeholders are able to contribute their knowledge to build the network. These models can continue to be developed (subject to resources) as new information or upcoming decisions emerge.

ANNEX 2: St Helena NCA team members and key responsibilities * => not attending econoblitz

Team member	Organisation	Summary of responsibilities
Ness Smith	SAERI	General coordination Coordinating Cultural, Tourism, Forestry assessments. Developing conceptual S-E models Cultural, Tourism Tourism value chain interviews
Tara Pelembe	SAERI	Stakeholder coordination Coordinating Peaks NP and Agriculture assessments Developing conceptual S-E model Peaks NP
ILaria Marengo*	SAERI	GIS mapping linking to Bayesian models Liaising with AMV team for above
Rob Fish	University of Kent	Scoping for Cultural ES assessment Developing Cultural conceptual S-E model Briefing key stakeholders on NCA work
Dimitrios Bormpoudakis	University of Kent	Data lead for Cultural & Tourism assessments Co-lead conceptual S-E model Peaks NP Social media analysis
Amanda Gregory	JNCC	JNCC coordination Coordinating CBAs Supporting conceptual S-E models Tourism, Peaks NP JNCC scoping
Vicky Morgan	JNCC	JNCC coordination Coordinating CBAs Supporting conceptual S-E models Agriculture, Forestry Supporting HPLS CBA JNCC scoping
James Hutchison	JNCC	Data support for Cultural & Tourism assessments Lead conceptual S-E model Forestry, Agriculture Social media analysis
Phil South	JNCC	Data lead Agriculture, Forestry, HPLS CBA Data co-lead Peaks NP Data support Cultural, Fishers Valley CBA
Kirsty Meadows	JNCC	JNCC communications
Sam Cherrett	SHG/independent	Data manager/coordinator Data co-lead Peaks NP Data lead Fishers Valley
Nick Conner	NSW Government/IUCN	Value chain/spend per night for Tourism Peaks NP tourism CBA Fishers Valley, HPLS Briefing key stakeholders on NCA and NC Accounting

Alistair McVittie & team*	Scotland's Rural College (SRUC)	Valuations for Peaks NP, Agriculture, Forestry (with a few exceptions) Bayesian models for Peaks NP, Agriculture, Forestry, Tourism, Culture Scenario development - with NS and stakeholders Liaising with IM for GIS mapping