Tools and Methods for Incorporating Ecosystem Services into Development Decision-Making: Caura Valley

6 and 7 November 2012

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Contents

Executive Summary

The workshop *Tools and Methods for Incorporating Ecosystem Services into Development Decision-Making: Caura Valley* was held under the Trinidad and Tobago component of the global Project for Ecosystem Services (ProEcoServ). ProEcoServ aims to better integrate ecosystem assessment and economic valuation of ecosystem services into poverty reduction and national sustainable development planning. ProEcoServ is also being implemented in Chile, Vietnam, South Africa and Lesotho between 2010 and 2014. More information on the global project is available at http://www.proecoserv.org/.

In Trinidad and Tobago, the project focuses on bundling key ecosystem services from forests, wetlands and coral reefs to show how these interdependent services contribute to human well-being and the national economy at three pilot sites:

- **Eastern Northern Range** (mainly Caura Valley)**:** sediment retention and water purification;
- **Nariva Swamp:** crop pollination and biodiversity; habitat quality and rarity.
- **Buccoo Reef**: coastal protection.

More information on the Trinidad and Tobago component is available at http://proecoservtt.weebly.com/index.html.

The workshop introduced a range of tools and methods for incorporating ecosystem services into development decision-making, ranging from the highly technical (e.g. spatial, statistical and image analysis such as InVEST [Integrated Valuation of Environmental Services and Tradeoffs] and Environmentally Adjusted National Accounts) to highly creative and interactive processes for developing a common community vision, identifying risks, modelling scenarios and developing adaptive responses. The workshop also explored the potential of the Green Fund to serve as the buyer in a Payments for Ecosystem Services (PES) scheme with community organisations in the Caura Valley as the sellers.

The workshop was based on an action learning approach and was facilitated in a highly interactive manner, with participants playing key roles in the action learning process (e.g. small group leaders, field trip guides). Opportunities were provided for participants to apply the learning not only to Caura but also to their sectoral context.

Tools used by the facilitators to stimulate action learning included:

- expert presentations;
- peer exchange and learning;
- field trip;
- effective questioning;
- reflective inquiry and listening; and
- the use of creative and visual techniques.

The workshop targeted a wide range of stakeholders with an interest in the sustainable development of the Caura Valley, including representatives of community-based organisations, government agencies, local government, the office of the local Member of Parliament, and international donor and technical agencies (see Appendix 1 for full participant list). They worked

together in plenary and small groups to examine the potential of and challenges to developing sustainable livelihoods in ecotourism and agriculture that would also support the maintenance or improvement of key ecosystem services. The groups reached consensus on a draft vision for Caura in 2022, which will now be discussed and improved upon through discussion with the wider community. The workshop then examined how current national or local policies, plans and practices could support this vision and identified a number of areas, notably agricultural and tourism incentives, which could be adapted to better support and catalyse sustainable livelihoods and healthy ecosystems.

Participants identified a number of risks that the community faces, many of which fell into the high probability, high impact category. In order to model and apply scenario planning, the groups focused on addressing the likely effects of climate change. The small groups (one focusing on agriculture and the other on ecotourism) were further challenged to develop adaptive strategies in response to an additional 'wild card' scenario (respectively changes in land use that would facilitate housing development on current agricultural land; and two murders taking place within a month close to the main tourism area).

The workshop concluded by identifying a number of next steps, with a particular focus on:

- stimulating increased dialogue between community members and policy makers using strategies such as thematic open days and a Caura stakeholder forum;
- finalising the vision for Caura, in conjunction with a wider group of community members, and then present it to a wider range of policy makers, including a field trip component; and
- developing a Green Fund proposal for a pilot PES project.

Additionally, participants felt that a training manual should be developed documenting the interactive, participatory approach and practical tools and methods used in the workshop. This would then serve as the basis for a Training of Trainers workshop to build capacity to roll the approach out more widely.

The ProEcoServ team will also be facilitating similar workshops at the other pilot sites (Nariva and Buccoo) in early 2013.

1. Overview of ProEcoServ project

The Project for Ecosystem Services (ProEcoServ) is a global initiative that aims to better integrate ecosystem assessment and economic valuation of ecosystem services into poverty reduction and national sustainable development planning. Trinidad and Tobago is one of five countries (along with Chile, Vietnam, South Africa and Lesotho) where ProEcoServ is being rolled out between 2010 and 2014.

The project will develop the capacity of users and beneficiaries of ecosystem services and decision makers to identify development choices that contribute to human well-being through strengthened biodiversity and ecosystem resilience.

ProEcoServ has three linked components:

- **Support tools for policy making:** Creation and application of locally appropriate tools and models to support development planning and policy making at all scales.
- **Assistance for policy implementation:** Supporting policy makers to implement appropriate ecosystem and ecosystem service management approaches at national and transboundary levels.
- **Bridge between science and policy:** Strengthening the link between science and policy making nationally and contributing to better understanding globally of science-policy linkages in the biodiversity arena.

In Trinidad and Tobago, the project focuses on bundling key ecosystem services from forests, wetlands and coral reefs to show how these interdependent services contribute to human well-being and the national economy at three pilot sites:

- **Eastern Northern Range:** sediment retention and water purification; **Nariva Swamp: crop polli**nation and biodiversity; habitat quality and rarity.
- **Buccoo Reef:** coastal protection.

For more information on the global project, see http://www.proecoserv.org/ and for the Trinidad and Tobago component, see http://proecoservtt.weebly.com/index.html.

2. Workshop target audience

The workshop was targeted at stakeholders at all levels of governance who play a role in decision- and policy-making for the Caura Valley (just referred to as Caura in the remainder of the report). Invitees included representatives of the Caura community; international donor and technical agencies; government agencies; local government; and journalists. They were selected based on their capacity to contribute actively to the achievement of the workshop and project objectives, and particularly their potential to influence policy in their sector and/or geographic area. Similar workshops are planned for the other two demonstration sites – Nariva and Buccoo.

A total of 29 people were invited and 18 attended, although some were there for only one of the two days. Five members of the ProEcoServ team also took part. A full list of participants is attached at Appendix 1.

Photo 1 Workshop participants Day 1
Credit Nicole Brown

Photo 2 Workshop participants Day 2
Credit Sarah McIntosh

3. Agenda and workshop objectives

The workshop sought to address all three of the main components of the project (see Section 2) and specifically:

a) To raise awareness amongst key stakeholders of the ProEcoServ project objectives and activities and how these can support their work.

b) To enhance understanding of key concepts used in the ProEcoServ project that are relevant to development planning.

c) To introduce tools designed to improve development planning and decision making.

d) To develop stakeholder consensus on a vision for Caura that balances ecosystem and human wellbeing.

e) To establish what plans/policies government agencies have that would (positively or negatively) affect the vision for Caura.

f) To review the identified uncertainties and drivers of change in Caura.

g) To develop scenarios based on potential external or internal shocks/ changes/ developments.

h) To discuss what project information participants would like to receive in future and in what form.

The agenda is attached at Appendix 2.

4. Methodology

The workshop was based on an action learning approach and was facilitated in a highly interactive manner, with participants playing key roles in the action learning process (e.g. small group leaders, field trip guides). Opportunities were provided for participants to apply the learning not only to Caura but also to their sectoral context.

Tools used by the facilitators to stimulate action learning included:

- expert presentations;
- peer exchange and learning;
- field trip;
- facilitators as learning coaches;
- effective questioning;
- reflective inquiry and listening; and
- the use of creative and visual techniques.

The workshop also featured questionnaires designed to collect baseline information on participants' understanding of key ProEcoServ concepts.

5. Welcome and overview of project

Professor John Agard presented an overview of the global and national project (see slide presentation at Appendix 3). He highlighted the following key elements of progress in and potential for the Trinidad and Tobago project:

- the buy in to the project and its objectives from the Minister and senior-level staff of the Ministry of Planning and Sustainable Development;
- the pilot project on environmentally adjusted national accounts (see also Section 7. 2 and http://proecoservtt.weebly.com/uploads/1/2/2/3/12239290/final_report_proecoserv.pdf);
- the buy-in from the former Minister of Finance and MP for the constituency in which Caura falls, Winston Dookeran, to this concept and the intention to engage the current Minister of Finance, Larry Howai in similar discussions;
- the potential for the tools being tested in the project (see Section 7) to be applied to the National Spatial Plan development process;
- the multi-sectoral composition of the National Steering Committee and its role in ensuring practical application of project tools and approaches; and
- the potential of the Green Fund to act as the buyer of ecosystem services.

Photo 3: Professor John Agard welcoming participants to the workshop. *Credit Nicole Brown*

6. Overview of available or proposed tools for improving planning and decision making

6.1. Mapping/InVEST/trade-off analysis

In concluding his overview presentation (see Slide 25), Professor Agard spoke briefly about the proposed use of spatial, statistical and image analysis to develop the project's outputs and to support decision- and policy-making. He specifically alluded to InVEST (Integrated Valuation of Environmental Services and Tradeoffs), a family of tools to map and value the goods and services from nature that are essential for sustaining and fulfilling human life (see http://www.naturalcapitalproject.org/ InVEST.html for more information). He noted that InVEST is a free tool that can be downloaded from the website.

Professor Agard then described trade-off analysis in more detail, using an example from Vancouver Island, British Columbia, Canada to illustrate the participatory process of first identifying a vision, then modelling and analysing possible futures (scenarios) and unexpected consequences and trade-offs (see Appendix 4 for slide presentation).

6.2. National accounts

Alexander Girvan of The Cropper Foundation then outlined why nature should be valued and how this can be done and incorporated into national accounting, so that the country produces Environmentally Adjusted National Accounts (see presentation at Appendix 5), using the United Nations System of Environmental and Economic Accounts 2012 (see http://unstats.un.org/unsd/envaccounting/seea.asp for more information). This method facilitates monitoring and evaluation, targeted spending to achieve a balance between human well-being and environmental conservation, and increased public awareness of the value of ecosystems. It can also provide the basis for Payment for Ecosystem Services (PES) schemes.

In concluding, he illustrated the relevance of this tool to decision-making in Trinidad and Tobago by noting that the estimated value of forest ecosystem services in Trinidad and Tobago is US$ 497 million (or over TT$ 3 billion) per year.

A full report (Girvan and Teelucksingh 2012) on a pilot study of the valuation of ecosystem services (with a focus on the Northern Range ecosystem of Trinidad) and the incorporation of these values into Environmentally Adjusted National Accounts is available at http://proecoservtt.weebly.com/uploads/1/2/2/3/12239290/final_report_proecoserv.pdf.

6.3. Payments for ecosystem services

Maurice Rawlins then provided an overview of Payments for Ecosystems Services (PES). He outlined the key characteristics of a full PES scheme as:

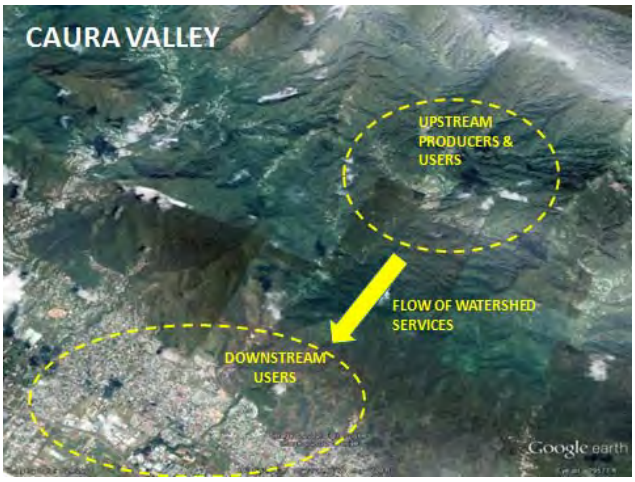
- willing buyer of ecosystem services (ES) and seller of ES;
- well-defined ES, or land use/ practice that can provide service;
- value of service should be known;
- well-defined property rights/ ownership of land;
- systems of monitoring and evaluating of the service being provided.

> Payments for Ecosystem Services (PES) occur when the actions of an individual or community (producer) help to provide ecosystem services, and the users (beneficiaries) of the ecosystem services compensate the individual or community for their actions.

He outlined how such schemes were run in Costa Rica, the country where they are most well-established. He then used a map to illustrate the flow of ES benefits from upstream providers to downstream consumers (see photo x below). The full presentation is attached at Appendix 6.

Photo 4 Maurice Rawlins presenting on PES *Credit Nicole Brown*

Photo 5: Map of the Caura Valley showing flow of PES benefits *Credit Maurice Rawlins*



6.4. Scenarios

Professor Agard concluded the presentations on tools by outlining the value of scenario development to decision-making (see presentation at Appendix 7). He used the example of scenario planning in South Africa towards the end of apartheid to illustrate how valuable such exercises can be in determining viable policy directions. He also provided examples of scenarios from the Global Scenarios Group and from the Caribbean Sea Assessment.

> "It is now generally accepted that scenarios do not predict. Rather, they paint pictures of possible futures and explore the differing outcomes that might result if basic assumptions are changed." (UNEP 2002)

7. Field trip

Participants were divided into three groups for the field trip, each focusing on a different aspect of Caura's development and led by a Caura resident:

- Agriculture (Shango Alamu)
- River-based ecotourism (Yolande Youk See)
- Forest-based ecotourism (Malachi Joseph)

Each group was provided with a list of questions to consider during the field trip (see Box 1)

Box 1: Field trip questions

While you on the field trip, here are some questions to consider

Field trip: Group 1 Agriculture

1. What are the critical ecosystem services for agriculture in Caura?
2. What agricultural activities are positively and negatively affecting ecosystem services in Caura?
3. What opportunities for livelihoods in agriculture would sustain or improve ecosystem services in future? What opportunities might have a negative effect on ecosystem services?
4. Does Caura have the necessary capacity (e.g. people, money, skills, equipment etc.) to make the most of the sustainable agriculture opportunities? What capacities would need to be built?
5. What are the main challenges to sustainable agriculture in Caura now? What might they be in future?

Field trip: Group 2 Ecotourism (River-based ecotourism)

While you on the field trip, here are some questions to conside

1. What are the critical ecosystem services for ecotourism in Caura?
2. What ecotourism activities are positively and negatively affecting ecosystem services in Caura?
3. What opportunities for livelihoods in ecotourism would sustain or improve ecosystem services in future? What opportunities might have a negative effect on ecosystem services?
4. Does Caura have the necessary capacity (e.g. people, money, skills, equipment etc.) to make the most of the sustainable agriculture opportunities? What capacities would need to be built?
5. What are the main challenges to developing ecotourism in Caura now? What might they be in future?

Field trip: Ecotourism (Forest-based ecotourism)

1. What are the critical ecosystem services for ecotourism in Caura?
2. What ecotourism activities are positively and negatively affecting ecosystem services in Caura?
3. What opportunities for livelihoods in ecotourism would sustain or improve ecosystem services in future? What opportunities might have a negative effect on ecosystem services?
4. Does Caura have the necessary capacity (e.g. people, money, skills, equipment etc.) to make the most of the sustainable agriculture opportunities? What capacities would need to be built?
5. What are the main challenges to developing ecotourism in Caura now? What might they be in future?

Photo 6 Field trip participants viewing the river and current visitor infrastructure
Credit Julius Smith

Photo 7: Participants explore the potential for forest-based ecotourism *Credit Maurice Rawlins*

8. Sectoral visions for Caura in 2022

The small groups then worked on developing a vision for Caura that would address the challenges and exploit opportunities they identified during the field trip (see Appendix 8 for full instructions provided to groups). Each group initially brainstormed the key elements of its visions before converting these ideas into a vision statement and a presentation. The groups were encouraged to be as creative as possible in developing their presentations.

Table 1: Caura 2022 Vision elements identified by the three groups

Agriculture	River-based ecotourism	Forest-based ecotourism
• Agro-tourism • Strong demand for Caura-branded goods • Development of the Caura brand • High nature value framing maintains/improves natural value of Caura Valley ecosystem services • Model community for agriculture in the Caribbean • Shift in culture through participatory research to eco-friendly farming • Caura is a centre of excellence for HNV farming education • Strong and appropriate governance structures for HNV farming • National consumer understanding and alignment with HNV approach • Caura brand protected ©/TM • A premium is paid for the Caura product and increased sustainable demand > $$$ • Collaboration among CBOs in support of HNV farming	• Residents and visitors sensitised to and respect what Caura has (to offer) • Ongoing scientific research • Crayfish back in the river • Natural resources restored/left intact • River banks stabilised • Visitors contribute to Caura livelihoods • Shuttle bus from hospital area with parking and entry fee collection • Aesthetically pleasing area at the river – not congested (number of people and cars effectively managed) • Pathways and landscaping • Pipe-borne water • Effective waste management • Good signage • Controlled access • Guided tours • Zoned activities with site for religious activities at WASA	• Reliable pipe-borne water • Well developed, multi-purpose community centre • Reliable transport system • Enhanced roadways • Security of land tenure • Managed built development • Preferred ecotourism destination • Effectively managed recreation sites • 24-hour monitoring system • Lands recommitted to forestry (Forestry Division) • Educational tourism • Specific types of recreation under sustainable management • Folklore and culture (integrated) • Sustainable business plan • Government partnerships • Built resilient communities through the creation of sustainable livelihoods • Expanding youth involvement (for continuity) • Positive reforestation • Environmental consciousness • Multiple tourism activities • Expanded small enterprise opportunities, e.g. cashew • Development of cottage industry

The three vision statements read as follows:

Forest-based ecotourism

- Enhanced quality of life
- Resilient community
- Sustainable livelihoods
- Equitable access to amenities and public services

River-based ecotourism

- Caura people have sustainable livelihoods based on sustainable use of natural resources.
- Visitors have a unique and fulfilling experience based around the Caura river.
- Full integrity of river ecosystem maintained.

Photo 8 Presenting the findings of the forest-based ecotourism group
Credit Nicole Brown

Agriculture

- Centre of Excellence for High Nature Value farming, with a well-known and in-demand brand.
- Caura's leaders, residents and farmers have the capacity (including governance structures) to implement and promote HNV farming and are a driving force for change of culture – in and out.

Two groups (forest-based ecotourism and agriculture) produced 3-D models of their visions using the craft materials provided (see photos 9 and 10 below). The river-based ecotourism group presented a short skit that highlighted how the key challenges (dumping of solid waste in the river, insufficient management and infrastructure, conflicting uses of the river etc.) had been addressed over the intervening period.

Photo 9: Developing the vision for agriculture in Caura 2022
Credit Nicole Brown

Photo 10: The vision for forest-based ecotourism in Caura 2022.
Credit Nicole Brown

The agriculture group complemented its 3-D presentation with a rapso-style song on High Nature Value (HNV) Farming, composed and sung by Dr Alamu and a TV interview skit highlighting the various aspects of the agricultural programme (Caura brand, HNV farming, produce marketing and training centre).

Photo 11 Agriculture Group presents vision for Caura agriculture in 2022 via TV interview skit
Credit Nicole Brown

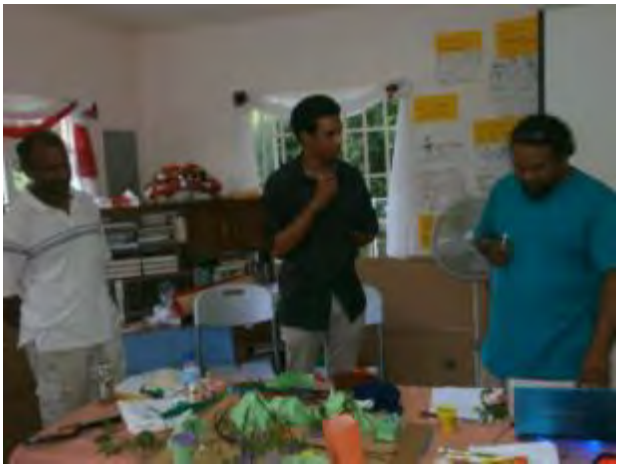


Photo 12: Caura agriculture 2022 rapso style
Credit Nicole Brown

9. Consensual vision

On Day 2 of the workshop, participants reviewed the sectoral visions and identified the areas of commonality that could form the basis of a consensual vision statement as:

- Improved level of well-being for Caura residents, including increased self-esteem and empowerment
- Equity/inclusion
- A passionately caring society
- Participatory policy-making, community driven
- Mutual respect between residents, visitors and other stakeholders
- Strong Caura brand (agriculture and tourism)
- Preserving/managing natural resources in ways that support sustainable livelihoods, now and in the future
- Eco-/agro-tourism
- Focus on multiple values of clean water
- Improved services for the community

10. Potential conflicts and trade-offs

10.1. Conflicts

The main areas of potential conflict that were identified were:

- differing interpretations of key concepts such as ‘sustainability’;
- agriculture versus forest conservation/management
- river buffer zone versus agricultural land
- water use (agriculture, residential, industrial, tourism etc.)
- policy/plan conflicts
- land use conflicts
- maximising income from ecotourism versus improving ecosystem services
- (un)willingness to pay (PES scheme).

It was felt that the current conflicts that exist in the river area between, for example, between recreational and religious use, access to clean water and use of the river for dumping garbage, could be resolved by improved management and infrastructure.

10.2. Trade-offs

Participants felt that the main trade-off that would need to be negotiated would be between short term financial gain as against long-term income generation and maintenance of ecosystem services. Continuing public awareness and education were seen as the main ways to foster a commitment to long-term sustainability.

11. Stakeholder support for vision

11.1. Policy environment

Participants then discussed what policies, plans, funding initiatives or other activities in their sectors or organisations would support the emerging collective vision for Caura. Table 2 below shows their responses. Little was identified that would hinder the vision, although it was felt that some of the current incentive programmes, for example in agriculture and tourism, run counter to or do not actively support principles of sustainability.

Table 2: Policy, programmes and practices that support the vision for Caura.

GOVERNENT POLICIES AND PROGRAMMES		
Ministry	**Policy**	**Notes**
Ministry of Environment	Forest policy	Policies enshrine no net loss of forests and consolidated management. Implementation currently hindered by lack of enabling legislation and controversy over proposed Forest Authority.
	Protected areas policy	
	Forestry incentives programme	
	Climate change policy	Few participants were familiar with the content of the policy but there was a general sense that it should be supportive of the vision.
Ministry of Planning and Sustainable Development	Medium term policy framework 2011-2012	
	Working for Sustainable Development in T&T	
	National Spatial Development Plan	Planning process underway but not complete.
	Local Development Plan	
	Town and Country Planning Legislation	Participants noted that although legislation exists, it is not always enforced.
	Guidelines for Hillside Development in the Northern Range	
Ministry of Food Production	Policy focus on three relevant areas: • environment • food security • sustainable agriculture	
	Agricultural incentives programme	Incentives are for things like vehicles and equipment and therefore not HNV farming oriented.
Ministry of Tourism	Tourism policy?	Participants were unclear about whether there is a current tourism policy and, if so, the

GOVERNENT POLICIES AND PROGRAMMES		
Ministry	**Policy**	**Notes**
		extent to which it supports ecotourism development.
	Tourism incentives	Current incentive regime is not particularly supportive of small scale, community-based ecotourism development.
Ministry of Arts and Multiculturalism	National Cultural Policy	Drafted, public consultations held in October.
PROGRAMMES AND PROJECTS		
Agency	**Programme/project**	**Notes**
Forestry Division	Community Forestry and other programmes	
UNDP/FAO/GEF SGP/TCF	Sustainable agriculture projects in Caura	
GEF SGP	Small Grants Programme supports demo/pilot projects that can influence policy	Presented as an ongoing opportunity, also current funding fire guardianship and climate change projects in Caura.
GEF SGP	Adaptation Fund	Opportunity
Green Fund	Support for demo/pilot projects that have potential for expansion or replication.	Offers potential for PES scheme.
MP's Office	Tourism development initiatives	MP has designated someone to head up such initiatives.
PROGRAMMES AND PROJECTS		
Actors	**Practice**	**Notes**
Caura stakeholders	Regular meetings in the framework of different projects/project planning	Stakeholders include policy makers and donors as well as Caura community members
Member of Parliament	Supportive of Caura development focus	Individual rather than policy support so could change at next election.

11.2. Potential to apply decision support tools

Participants then examined whether and how the tools introduced earlier in the workshop could assist with the development or implementation of supportive policies and programmes. Table 3 below highlights the main area where participants felt the tools could be applied or adapted.

Table 3: Practical application of the decision support tools

Tool	Application	Notes
Mapping/InVest	By Town and Country Planning Division, e.g. for National Spatial Development Plan and Hillside Development policy.	
Payments for Environmental Services (PES)	PES thinking could be applied to taxation, e.g. something like a road fund but where funds collected are applied to conservation.	

Tool	Application	Notes
	PES thinking could be applied to current incentive regimes, rewarding sustainable behaviours rather than just production (in agriculture)	
	Green Fund can act as PES system, collecting taxes to purchase environmental services on behalf of the country as a whole.	Challenge is that Green Fund legislation does not currently support PES approach. Creating willingness to pay was also seen as a challenge.
	(Re-)introduction of a land tax could support PES/conservation by valuing land and development according to its positive or negative impact on environmental services.	Land tax has been temporarily suspended pending revisions to valuation/approach
	Potential for PES to encompass non-financial rewards, e.g. Caura could receive pipe-borne water in recognition of its conservation of ecosystem services.	
Valuation	Can support the no net loss element of the Forest and Protected Areas Policy and support elements of PES approach and/or requiring compensation where loss occurs.	

12. Risk, resilience and uncertainty in Caura

12.1. Ecosystem services in Caura

As a precursor to the discussion on risk and resilience, the groups identified the ecosystem goods and services from which Caura benefits and/or provides to others, resulting in the collective list shown in Box x. This exercise built on a list generated by community stakeholders in a previous workshop on November 29, 2011.

Box 2 ecosystem services in Caura

- Freshwater provision
- Water purification
- Water cycling
- Food/drink
- Wood
- Building materials e.g. bamboo
- Medicine
- Craft materials
- Home for animals
- Soil nutrients for agriculture
- Soil stabilisation
- Recreation (river)
- Hiking
- Aesthetic beauty
- Cultural/religious value
- Sense of home/place
- Carbon sequestration
- Air purification
- Education
- Research

12.2. Threats to the vision

Participants were reminded that the collective vision for the Caura Valley takes place in a broader context where external factors can influence community, agency or individual actions towards making the vision a reality. The main threats identified are shown in Box 3 below.

Box 3: Threats to the collective vision for Caura

- Forest fires
- Decreasing river levels
- Sewage pollution
- Heavy use of chemicals in the area
- Dumping (rubbish, appliances)
- Recreational pollution
- (Over-) hunting
- Landslides
- Inappropriate residential or tourism development, particularly upstream
- Deforestation
- Floods
- Invasive species
- Pests/diseases
- Plants/animals
- Political instability
- Crime
- Unregulated visitor numbers
- Quarrying
- Anti-social behaviour by visitors
- Increased climate variability > decreased water quality
- Encroachment by neighbouring communities

12.3. Risks

Participants were then asked to write down up to five things (words or phrases) they associate with "risk" which produced the list shown in Table 4 below.

Table 4: What I think of when I hear the term 'risk'

General	Specific
• Gamble • Positive • Adverse • Damages • Uncertainty • Loss • Vulnerability • Conflict • Probability • Insecurity • Challenges • Buy-in	• Fire • Climate change • Funding • People • Unemployment • Quality

Following some discussion, it was agreed to adopt the following as the working definition of risk: *the probability/chance/likelihood of an event having an impact on (the vision).*
Participants then mapped the threats on a risk matrix as shown below:

High

IMPACT

High Impact/Low Probability Hazards/threats that do not happen often, but have a high impact	**High Impact/High Probability** Hazards/threats that happen often and have a big impact
Low Impact/Low Probability Hazards/threats that do not happen often and do not have a big impact	**Low Impact/High Probability** Hazards/threats that happen often, but do not have a big impact

Low

High

PROBABILITY/LIKELIHOOD

As can be seen from Photo 14 below, the majority of the threats were deemed to fall into the high impact, high probability category. These threats included deforestation, pollution from recreational activities, illegal dumping of waste and run-off from chemical inputs to agriculture. Some of the high impact/high probability threats identified were linked to climate change impacts, such as flooding, increased climate variability, and increased (agricultural) pests and diseases.

Photo 13: Risk mapping. *Credit Sarah McIntosh*

Photo 14 Creating the Risk Matrix *Credit Maurice Rawlins*

13. Scenarios and scenario responses: building resilience and adaptive capacity

Participants then worked in two small groups (agriculture and tourism) on scenario planning for Caura, using the likely impacts of climate change in Trinidad and Tobago as the main scenario:

- Drier dry seasons
- Rainier rainy seasons
- More intense storms
- Hotter days and nights

In the middle of the exercise, each group was handed a further 'wild card' scenario as shown below.

Tourism wild card scenario
Two murders are committed in Caura in one month and the UK and US Embassies issue travel advisories warning visitors.

Agriculture wild card scenario
50% of Caura agricultural land is re-designated for multi-purpose use.

Photo 15: Ecotourism group working on responses to scenarios. (*Credit Sarah McIntosh*)

The collective responses showing the potential impacts and adaptive responses to climate change in Caura are shown in Photo 16 below.

Photo 16: How climate change is likely to affect the vision for Caura and adaptive responses.

The responses to the additional wild card scenarios are shown in Tables 4 and 5 below

Table 4 Tourism responses

Impact	**Ways of addressing**
Negative image/brand	Education and awareness Security-stakeholder PR – high level Develop a Security Authority
Less visitors	Focus more on local and regional tourism
Loss of stakeholder involvement	Reinforce existing stakeholder relations Seek new stakeholders
Loss of livelihoods	Develop new markets and products: Local International Regional
Distrust between visitors and villagers	Education and awareness PR - high level

Table 5: Agriculture responses

Impact	**Ways of addressing** (part complete)
Local opposition (to plan)	Show willing to negotiate
Increased numbers of visitors causing negative impact (on ecosystem)	• Low impact and green recreation
Increased flooding and drainage issues	• Rural tourism - additions to houses (for visitor accommodation) • WASA pond
Less carbon sequestration	Low impact renewable energy
Increased landslides	
Destruction of habitats by landslides	
Reduced amount of food	
Reduced quality and quantity of water	

It was agreed that a process would be needed for building resilience and adaptive capacity in the Caura community, which would include:

- Building consensus
    - within community
    - with external stakeholders
- Prioritising actions
- Building a guiding ideology

14. Next steps

It was agreed that some critical next steps would be as shown in Table 6 below

Table 6: Next steps

Action	Responsible
Develop a training manual outlining the practical tools and methods used in the workshop	ProEcoServ team
Design and facilitate a training of trainers workshop to build capacity to apply the tools and methods in the manual	ProEcoServ team
Stimulate increased dialogue between community members and policy makers using strategies such as: o Focused open days o Assigning a point person to each community event o Caura stakeholder forum	Caura community groups
Finalise the vision for Caura, in conjunction with a wider group of community members	Caura community groups
Present the vision to a wider range of policy makers, including a field trip component	Caura community groups
Develop Green Fund proposal for pilot PES project	ProEcoServ team
Identify funding/providers of proposal writing training for Caura community	All (with Sarah McIntosh taking the lead)

In discussing how participants preferred to receive future communications about the project, it was agreed that the newsletter and website were useful tools for generic updates. However, customised approaches should be developed/tested for individual agencies, where their specific input or buy-in was being sought.

15. Evaluation

15.1. Oral evaluations

In an initial oral evaluation, participants were asked evaluate the pace, progress in achieving the workshop objectives, and process (see Table x below).

Table 7: Oral evaluations

Pace	Progress in achieving objectives	Process
Good (2)	"Enlightening"	Hands on good, roll out good
More depth would be useful (2*) **Both responses were from people who could not attend Day 1*	Although topics have been discussed many times, this was grounded, used different angles and provoked deeper thought. Not externally dictated.	Field trip provides deeper understanding, brings issues to life
A little fast (2)	Good/yes (2)	Loved interactive nature of the workshop (2)
More time on post-exercise reflection would be useful (1)	Objectives clearly met	Like use of tools with community, and facilitators applying them in simple ways

Pace	Progress in achieving objectives	Process
	Development of vision good but would be useful to include more community members	Liked vision presentation
	Good to see the importance of policy influence and policy development introduced at the community level	Shame more stakeholders couldn't come/stay for the full two days.

In discussing some of these comments, it was noted that there is a trade-off between effective process, which limits workshop numbers to a maximum of about 30 persons, and wider inclusion and participation. It was agreed that wider community visioning could be done before or after the workshop but doing it beforehand would only be realistic if somebody had been trained to facilitate the process. Similarly, there is a trade-off between going into greater depth and keeping the workshop at a length which most stakeholders can attend. It was noted that, although several people felt that the workshop could usefully have been longer, in practice only seven participants were able to attend on both days

15.2. Written evaluations

15.2.1. Overview

Seven, or 63 per cent, of the 11 participants who were present on day 2 of the workshop returned the completed workshop evaluation forms and their responses are summarised below. See Appendix 1 for the collated responses to the questionnaires.

15.2.2. Workshop Objectives

Participant response to the workshop was very positive and six or 86% of the respondents felt it lived up to their expectations (agree and strongly agree). All respondents agreed that they were well informed about the workshop objectives. Of these, 4 or 57% strongly agreed. Further, all participants agreed that the workshop met its objectives, with 3 or 43% strongly agreeing.

15.2.3. Workshop Content

Most (six or 86%) respondents found the workshop content straight forward, rating it 4 and 5 on a scale that ranged from 1 = Too complex to 5= Very straightforward

Few participants offered a viewpoint on what **was least useful** about the workshop. There was no particular trend in the three responses: for one respondent, the lease useful aspect was the presentation on National Accounts; for another it was inadequate representation in the workshop from stakeholders and community members. The third respondent who answered this question indicated that everything was valuable.

The elements of the workshop that respondents found **most useful** were discussions on the Caura Valley project (2 respondents); the site visit; the visioning exercise; learning more about Payment for Ecosystem Services and about ProEcoServ; and the interactive nature of the workshop.

Suggestions on **how to improve the workshop** included: allotting more time for the activity (4 respondents); ensuring broader participation among stakeholder groups (2 respondents); and having more in-depth discussions on issues (no specific issues were highlighted, however).

All respondents felt the workshop had given them **new viewpoints and insights.** Six indicated that it had done so to a great degree while one indicated "somewhat."

Of the five respondents who answered the question about the **application of ideas** resulting from the workshop experience, two indicated they would use the workshop's interactive tools, such as the visioning exercise, in their work, including for project and proposal development for fundraising. One respondent highlighted the impact of climate change; another indicated they would share knowledge gained with their community, and the final respondent said they would apply scenarios/scenario planning.

Only 3 respondents answered the question about **constraints in applying ideas** discussed and of this number, one said there were no barriers. The specific constraints identified were: complexity [of the issues discussed] and inexperience; and institutional processes.

15.2.4. Venue and Administrative Arrangements

There was overall satisfaction with the venue and administrative arrangements. The field trip, meeting rooms, and documentation were rated between good and excellent by those respondents who answered these questions. While one respondent gave the refreshments a fair rating, the other five who answered this question rated it between good and excellent. See Table 8.

Table 8. Venue and Administrative Arrangements

	Poor	Fair	Good	Very Good	Excellent	NR	Total
a. Field trip arrangements					3	4	7
					43%	57%	100%
b. Meeting rooms			3	1	2	1	7
			43%	14%	29%	14%	100%
c. Documentation			2	1	2	2	7
			29%	14%	29%	28%	100%
d. Refreshments		1	1	1	3	1	7
		14%	14%	14%	43%	14%	100%

15.2.5. Presenters' Skills

The presenters' skills were rated highly – very good to excellent— by the six people (86%) who responded to the question.

15.2.6. Facilitators' Skills

The facilitators' skills were also rated highly: very good to excellent for maintaining a dynamic and interesting atmosphere as well as for bringing each discussion session to a satisfactory conclusion; and good to excellent for allowing for sufficient discussion and encouraging participation. See Table 9.

Table 9. Facilitators' Skills

	Poor	Fair	Good	Very Good	Excellent	NR	Total
a. Maintained a dynamic and interesting atmosphere				3	3	1	7
				43%	43%	14%	100%
b. Allowed for sufficient discussion and encouraged participation			1	2	3	1	7
			14%	29%	43%	14%	100%
c. Brought each discussion session to a satisfactory conclusion				3	3	1	7
				43%	43%	14%	100%

15.2.7. Other Comments and Feedback

Three people responded to the question soliciting additional comments. One suggested that the workshop topic be continued; one praised the workshop approach; and the third was appreciative of the opportunity to be part of the activity.

- "Continuity."
- "Excellent approach to the workshop."
- "Thank you for allowing me to be part of this useful workshop. It was very educational."

See also Evaluation summary at Appendix 9

16. References

Girvan A. and Telucksingh, S. 2012. Environmentally Adjusted National Accounts for Trinidad and Tobago's Sustainable Future. Downloaded 27 November 2012 from http://proecoservtt.weebly.com/uploads/1/2/2/3/12239290/final_report_proecoserv.pdf.

Appendix 1

ProEcoServ - Tools and Methods for Incorporating Ecosystem Services into Development Decision Making: Caura Valley (Caura Community Centre, Room 204 Arthur Lok Jack Graduate School of Business)

6th & 7th November 2012
List of Attendees

Organization	Name	Attendance	
		6th Nov	7th Nov
Green Fund	Leslie-Ann Dillon	x	x
FAO	Lisa Martinez		x
Media	Shahad Ali	x	x
Min. of Food Production	Roma Collymore		x
Town & Country Planning Division	Camille Guichard	x	
Community Development Fund	Herold Gopaul	x	
Office of the MP - Tunapuna	Dr. Frank Ramlakhansingh	x	
Office of the MP - Tunapuna	Ricardo Rambally	x	x
Min. of Environment & Water Resources	Julius Smith	x	
Caura Valley Village Council	Sue Yen Carrera		x
Agriculture Consultant	Dr. Shango Alamu	x	x
Caura Women's Group	Yolande Youk See	x	x
UNDP	Nesha Beharry-Borg		x
Caura Valley Farmer's Association	Rajendra Ramcharan	x	
Caura Valley Hiking Clip/ Caura Valley Village Council	Malachi Glen Joseph	x	x
Caura Valley Farmer's Association	Quddus Muhammed	x	
WASA Water Resources Agency	Marissa McMillan		x
Members of the ProEcoServ team			
UWI	John Agard	x	
IMA	Jahson Alemu	x	x
Independent Communications Consultant	Nicole Brown	x	x
The Cropper Foundation	Alexander Girvan	x	x
Independent Communications Consultant	Sarah McIntosh	x	x
The Cropper Foundation/ UWI	Maurice Rawlins	x	x

Appendix 2

THE UNIVERSITY OF THE WEST INDIES

ST. AUGUSTINE, TRINIDAD AND TOBAGO, WEST INDIES
FACULTY OF SCIENCE AND AGRICULTURE
DEPARTMENT OF LIFE SCIENCES
Telephone: (868) 662-2002, 645-3232/9 Ext. 3095 Fax: (868) 663-5241

Tools and Methods for Incorporating Ecosystem Services into Development Decision-Making: Caura Valley

6th and 7th November 2012, 8.30am – 4.15pm

Agenda

Day 1: 6th November 2012 - Caura Valley Community Centre

Time	Activity
Morning session	
08.30-09.00	Registration
09.00-09.30	Welcome and overview of project
09.30-11.30 Including 30 minute break 10.00-10.30	Overview of the available or proposed tools for improving planning and decision making that supports conservation or improvement of ecosystem services • Mapping/INVEST/trade-off analysis • National accounts • PES • Scenarios Discussion of how these tools can be useful to decision-makers
11.30-11.45	Introduction to field trip, division into groups and handing out of instructions/questions for each group
11.45-12.30	Lunch
Afternoon session	
12.30-2.15	Field trip/tour
2.15-3.15	Development of sector/group visions for Caura in 5 years time (including working snack/drink break)
3.30-4.00	Presentation of visions
4.00-4.15	Recap and next steps for following day

Appendix 2

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Day 2: 7th November 2012 - Conference Room, La Joya Complex

Time	**Activity**
Morning session	
08.30-09.00	Check in and review of previous day Rapporteur's report
09.00-10.00	Development of consensual vision Discussion of trade-offs
10.00-10.30	Break
10.30-11.30	Government and other representatives of stakeholder groups explain what they are doing that would support the vision and/or what would need to change in order for them to be able to support the vision.
11.30-12.00	Assessment of baseline understanding of risk, resilience, uncertainty and adaptive capacity
12..00-12.30	What are the main risks and uncertainties facing Caura?
12.30-1.15	Lunch
Afternoon session	
1.15-2.15	Development of responses to specific scenarios
2.15-3.15	Presentation of responses Discussion of resilience and adaptive capacity, how this can be built and role that decision support tools could play in doing so.
3.15-3.45	Break
3.45-4.15	Evaluation of workshop Discussion of next steps Wrap up and thanks

PROJECT FOR ECOSYSTEM SERVICES (ProEcoServ)

CAURA ACTIVITY CENTRE

November 6, 2012

Professor John Agard
Department of Life Sciences
University of the West Indies

National Coordinator

Project Launch

Dr Bhoendradatt Tewarie
Minister of Planning and the Economy
Launches ProEco Serv National Inception Workshop

Major objectives and Aims of Project

1. Introduce Ecosystem Services Accounting into the T&T National accounts.
2. Introduce GIS based Ecosystem Services maps and an associated Decision Support System into Spatial Development Planning in T&T.
3. Develop a pilot Payment for Ecosystem Services (PES) case study.

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What have we achieved so far?

Pilot Project started on Environmentally Adjusted National Accounts

- United nations statistics Division -**System of Economic-Environmental accounting (SEEA)** 2003

Opening stock levels
Increases in stocks
Due to economic activity
Due to regular natural processes
Decreases in stocks
Due to economic activity
Due to regular natural processes
Due to natural disasters (net decrease)
Changes due to economic reclassification
Closing stock levels
Changes in environmental quality
Due to natural processes
Due to economic activity

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ProEcoServ is collaborating with the Ministry of Planning and Sustainable Development to introduce ecosystem services considerations into spatial development planning.

National Physical Development Plan - Request for Proposals
Posted on 14 February 2012

The Town and Country Planning Division of the Ministry of Planning and the Economy in conjunction with the National Planning Task Force is in the process of reviewing the National Physical Development Plan (NPDP) of Trinidad and Tobago. Read More.

50 YEARS OF INDEPENDENCE TRINIDAD & TOBAGO

Situational Analysis
more >

Harmonization of 14 Regional Plans
more >

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What progress has been made with fieldwork?

General Approach

1. Identify dominant natural ecosystems
   e.g. forest, wetlands, coral reefs & seagrass beds.
2. Identify major ecosystems on which people depend.
3. Create physical inventory.
4. Evaluate time series changes at case study sites for guidance at national level.
5. Map these ecosystem services into asset and production boundary of national accounts.
6. Value the change
7. Adjust against the existing national accounts.
8. Flag off the key messages for the policy makers.

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Implementation Approach

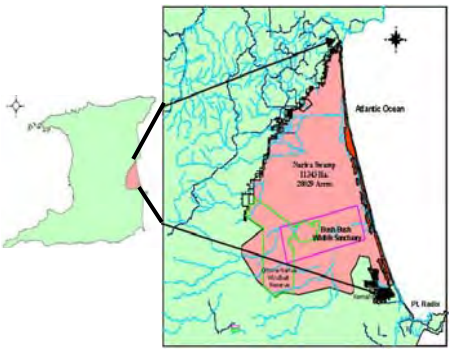
- Three Pilot sites:
  1. **Nariva Swamp (Trinidad)**
  2. **Caura Valley, Northern Range (Trinidad)**
  3. **Buccoo Reef and Bon Accord Lagoon Complex (Tobago)**

Implementation Approach

Ecosystem Services targeted:

- Crop Pollination
- Carbon Sequestration

Trinidad **Nariva Swamp**



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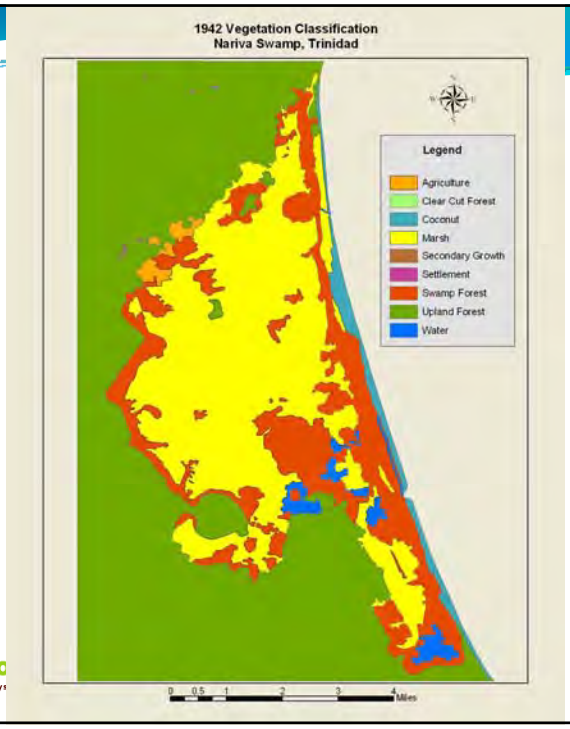
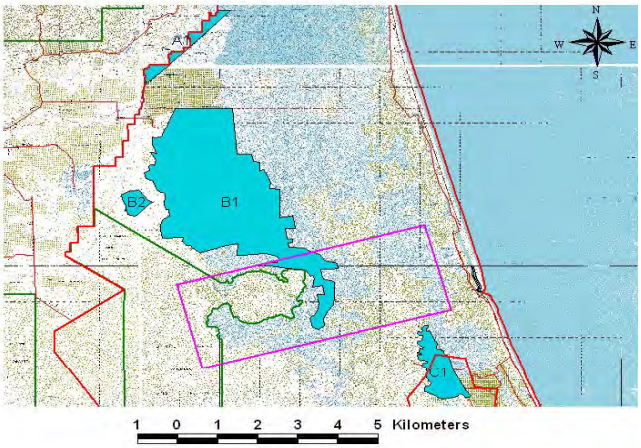

1942 Vegetation Classification
Nariva Swamp, Trinidad
Legend
Agriculture
Clear Cut Forest
Coconut
Marsh
Secondary Growth
Settlement
Swamp Forest
Upland Forest
Water
0 0.5 1 2 3 4 Miles

Areas to be reforested



Vegetation in deforested Block B sector of Nariva Swamp

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The specific objectives of the project are to:

- Sequester CO_2 through forest restoration in areas destroyed by illegal agriculture
- Enhance biodiversity in a coastal wetland by restoring freshwater swamp forest.
- Generate income for local communities.

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Project Components

- Component one: Carbon sequestration through afforestation and reforestation of selected areas of the Nariva wetland ecosystem.
- Component two: Methane and nitrous oxide mitigation through reforestation and restoration of surface hydrology at Nariva.

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Consultations with farmers and local communities

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FTIR used to measure methane and nitrous oxide emissions

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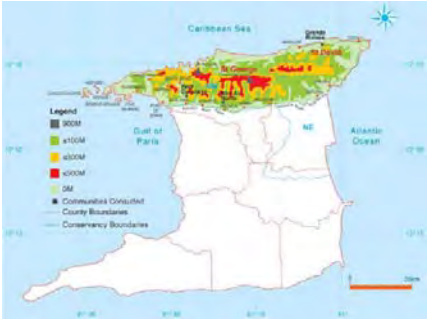
Caura Valley, Northern Range

- Erosion Regulation
- Flood control
- Water purification
- Recreation



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Implementation Approach

Ecosystem Services

- Erosion Regulation
- Water Purification

Ecoagriculture Project

Northern Range Trinidad

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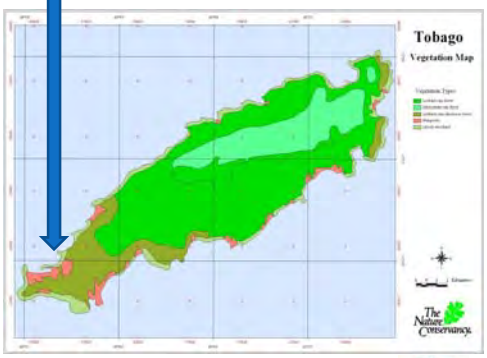
Implementation Approach

Buccoo Reef and Bon Accord LagoonComplex

Ecosystem Services

- Coastal erosion protection

Tobago



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Buccoo Reef

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Shoreline Protection Analysis (5 Steps)

1. Identify vulnerable areas
2. Identify areas protected by coral reefs
3. Evaluate the relative protection provided by reefs
4. Incorporate property values
5. Combine to evaluate potential storm damage avoided

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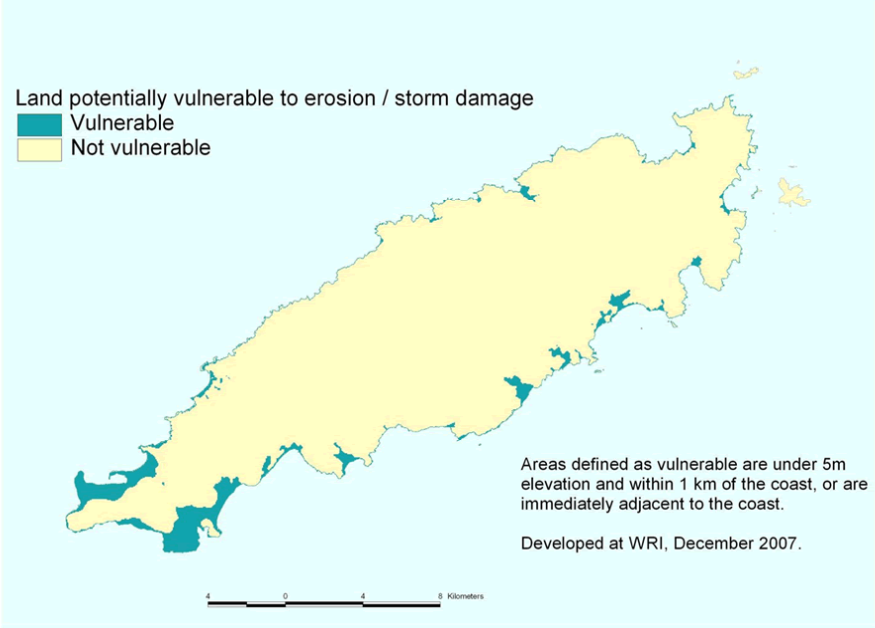
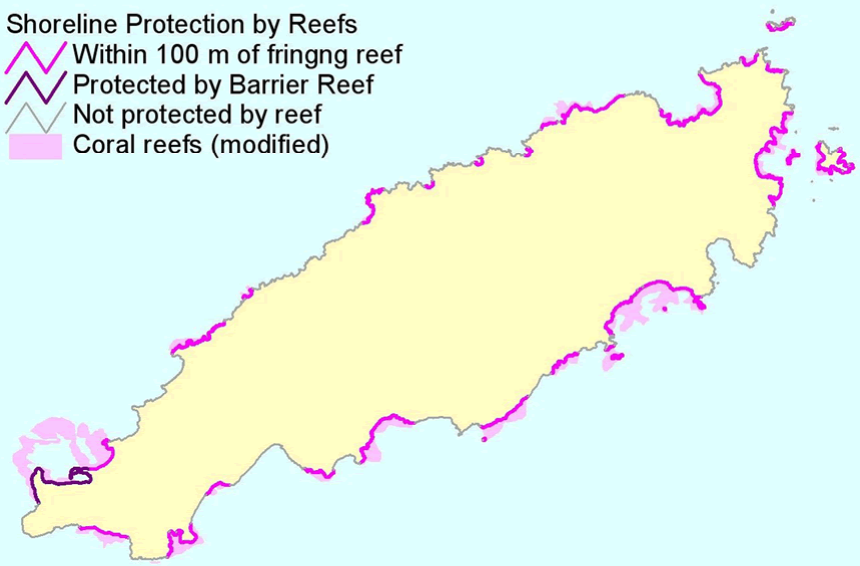
Tobago - Land Vulnerable to Wave-induced Erosion and Storm Damage



- 6% of Tobago's land area rated "vulnerable.

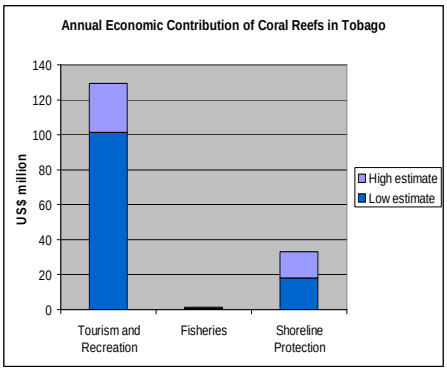
2. Shoreline Protection by Coral Reefs



Coral Reef Data from Millennium Coral Reef Mapping Project and R. Laydoo. Updated at WRI based on reef observations from IMA.

TOBAGO CORAL REEFS Valuation Summary

- Tourism and Recreation - US$100 to **$130 million** in 2006.
- Coral reef-associated fisheries - **US$0.8 – 1.3 million** / year
- Shoreline protection services – **US$18 and $33 million** per year.
- These are significant compared to Tobago's GDP, which was **US $286 million** in 2006.



- Coral reefs provide other important values not estimated in this study, and these numbers should be regarded as a lower bound estimate.
- Source: World Resources Institute

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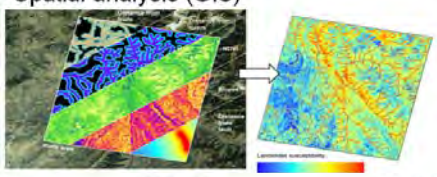
Methodology
-GIS Analysis, Ecosystem Services Models, Decision Support System User Needs Analysis

Spatial analysis (GIS)



Statistical analysis

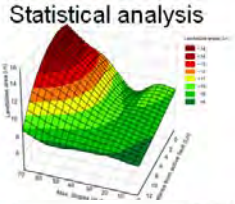


Image analysis

INPUT	TOOLS	OUTPUT
Data Text Maps Objects Images Videos Environmental Models Knowledge	DBMS Mapping Systems Visualization Advanced Statistics Analytical Functions Expert Systems Artificial Intelligence	Interpretation Integration Post Analysis Recommendation Reporting

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Thank you

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Trade-off Analysis

- Basic questions
  - "Are the solutions that are being suggested as good as possible, i.e., are they on the frontier?"
  - "How much must I give up to get a little more of what I want most?"
  - Pareto Optimality

Trade-off Analysis: Attributes

- Quantifiable characteristics of the problem
- "How could / would we define a bad / worse; good / better outcome?"
  - Reduced cost of service
  - Improved reliability in delivery
  - Reduced air emission
  - Less use of land
  - No use of Chlorine in the production process

Trade-off Analysis: Uncertainties

- Events over which the analyst has no control
- "… it might but then again…"
  - Climate Change
  - Gasoline prices
  - Regulatory change
  - Resource ($; land; human skills …) Availability

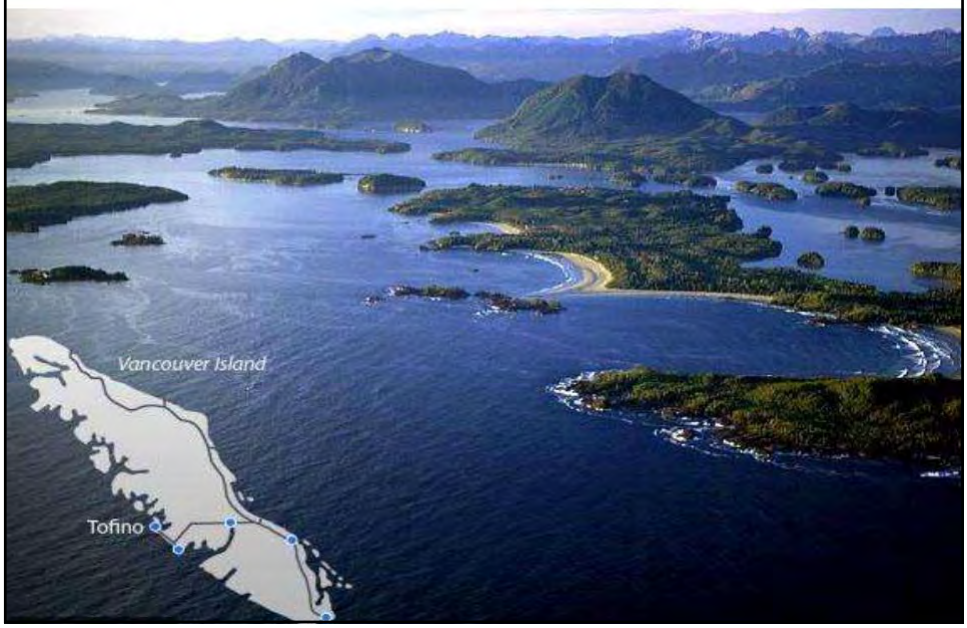
Trade-off Analysis: Options

- Actions that could / can be taken
- "We can build / buy / legislate / regulate …"
  - Build more houses
  - Plant more trees
  - Clear more land for agriculture
  - Restrict visitors and activities at the Caura River

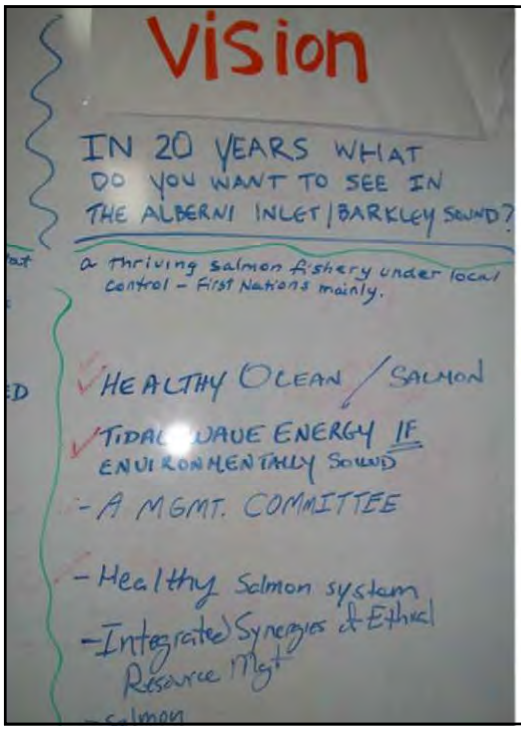
Trade-off Analysis: Scenarios

- Combining the options into a set of rational plans that can be analyzed
- "What could / can actually be done given reality and resource constraints?"
  - Given growth in demand (and uncertainty)
    - Stop slash and burn agriculture, invest in ecoagriculture.
    - Invest in eco-tourism and develop payment for ecosystem services for recreational activities.

West Coast of Vancouver Island, British Columbia, Canada

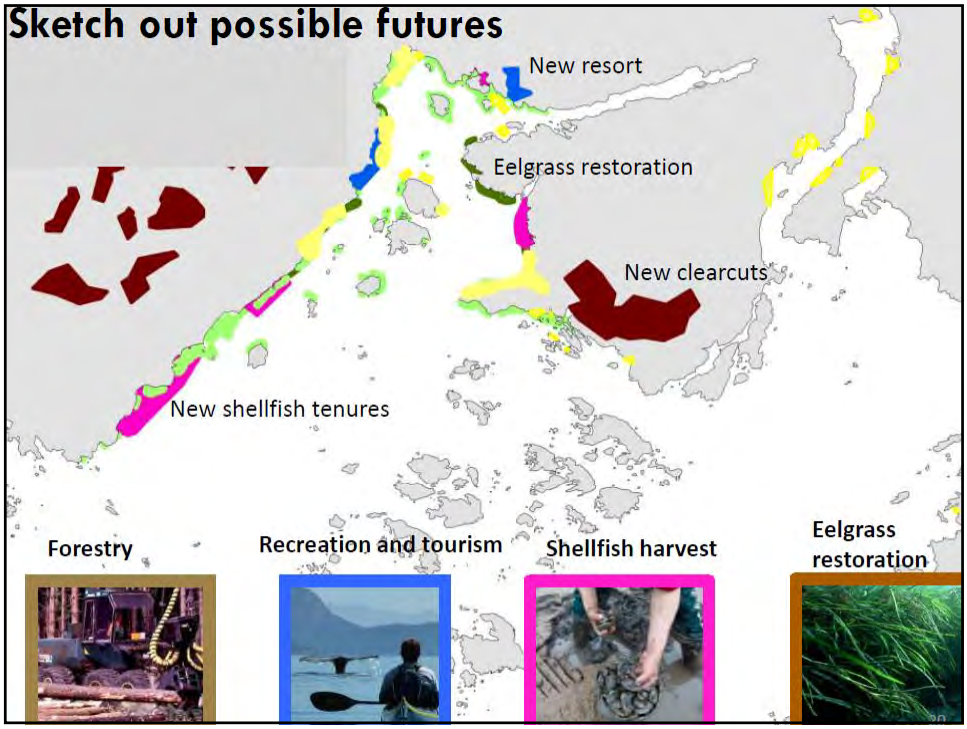


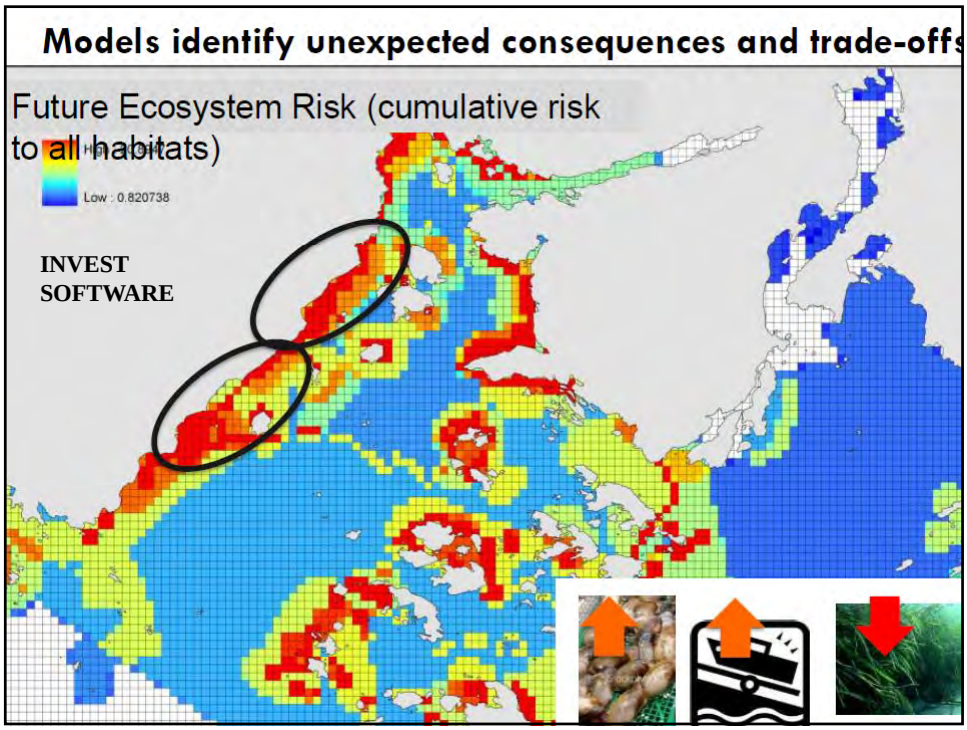
Photos: WCA

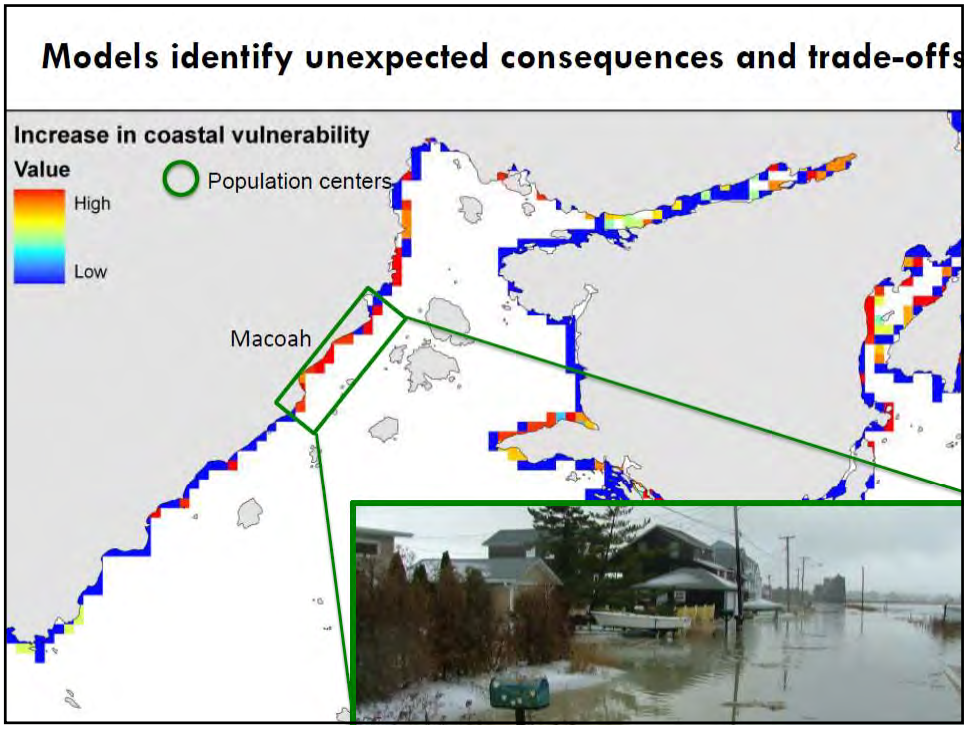


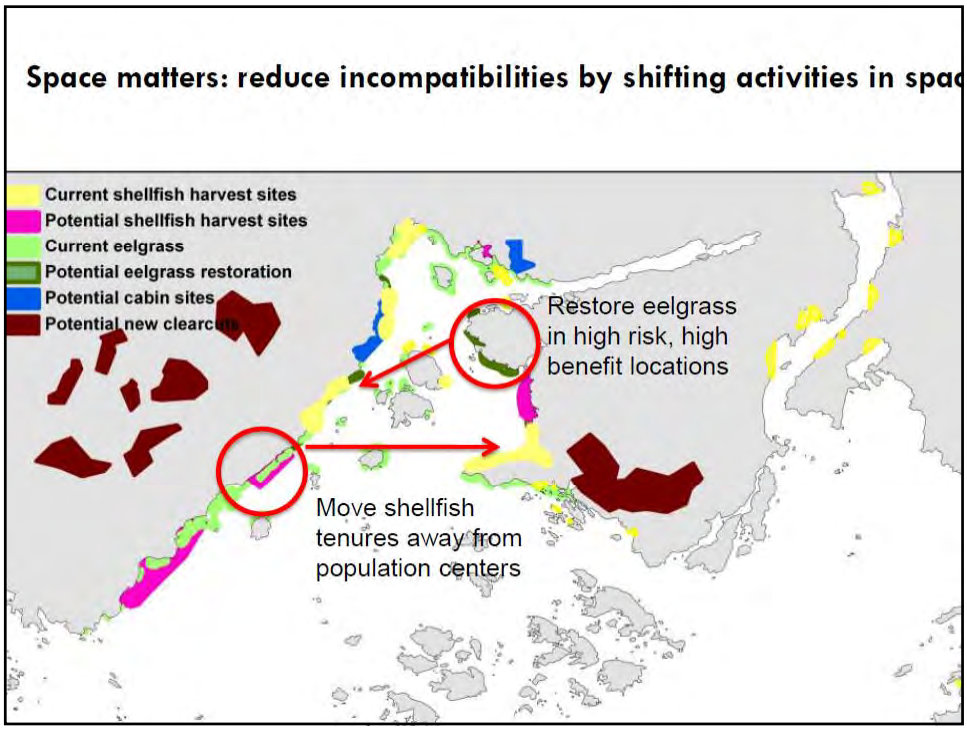
- Healthy environment
- Access to local seafoo
- Sustainable local jobs
- Tax revenue/rent
- Recreation and spiritu places
- Viewscapes
- Local sustainable ener

Photos: WCA


Sketch out possible futures
New resort
Eelgrass restoration
New clearcuts
New shellfish tenures
Forestry
Recreation and tourism
Shellfish harvest
Eelgrass restoration


Models identify unexpected consequences and trade-offs
Future Ecosystem Risk (cumulative risk to all habitats)
Low : 0.820738
INVEST SOFTWARE


Models identify unexpected consequences and trade-offs
Increase in coastal vulnerability
Value
High
Low
Population centers
Macoah


Space matters: reduce incompatibilities by shifting activities in spac
Current shellfish harvest sites
Potential shellfish harvest sites
Current eelgrass
Potential eelgrass restoration
Potential cabin sites
Potential new clearcuts
Restore eelgrass in high risk, high benefit locations
Move shellfish tenures away from population centers

Valuing Nature
Makes not just dollars but sense

Mr. Alexander Girvan
The Cropper Foundation

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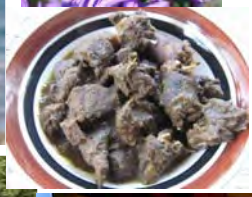
Dollars made



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Dollars saved

Valuation

- 'Economic invisibility' of nature
- Valuation – Making natures value more explicit
- Example – Damage cost avoided (saved)

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Estimated values for Trinidad

Ecosystem Service	ES Value (2010 USD per Ha per year)
Climate Regulation	1088
Erosion Control	346
Flood Prevention	5
Water Purification	359
Sustainable timber	397
Total value	**2195**

What can we do with valuation data?

- Enables monitoring and evaluation
- Facilitates targeted spending
  - Where are we losing environmental wealth (well being)
  - How much environmental wealth is lost
  - How best can we spend limited funds –environmental improvement
- Public awareness
- Payment of ecosystem services

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Environmentally Adjusted National Accounts

- System of Environmental and Economic Accounts - 2012 (SEEA)
- GDP and GNP are the most familiar and widely used economic indicators policymakers
- National accounts may be adjusted to reflect:
  - Delivery of Ecosystem Services
  - Environmental Damages
  - Expenditure on the Environment

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Where would you get?

- 497 Million US dollars per year 3,180,000,000.00 TT Dollars (3 Billion)
- Value of all forest ecosystem services in T&T

ProEcoServ Project for Ecosystem Services

gef UNEP

Thank you

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Payments for Ecosystem Services: An Overview

Maurice A. Rawlins
The Cropper Foundation
Caura Valley Stakeholders Workshop,
Caura Valley, 6th November 2012

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Broad definition: Payments for Ecosystem Services (PES) occur when the actions of an individual or community (producer) help to provide ecosystem services, and the users (beneficiaries) of the ecosystem services compensate the individual or community for their actions.

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PES Characteristics

- Willing buyer of ES and seller of ES
- Well-defined ES, or land use/ practice that can provide service
- Value of service should be known

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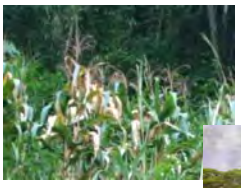
PES Characteristics

- Well-defined property rights/ Ownership of land (tenure)
- Systems of monitoring and evaluating of the service being provided



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Costa Rica PES: Watershed Services

- Payments for water services made by downstream 'users' to upstream 'producers'
- National fund for forest financing established
  - Financed by tax and payments from beneficiaries
- PES supported by Forest Law which recognizes forest environmental services

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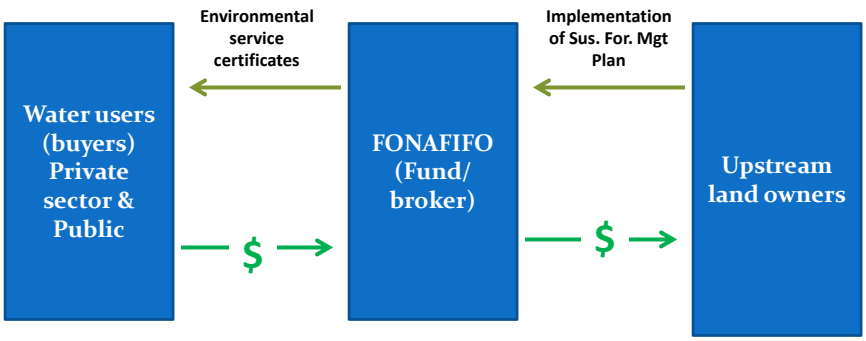
Costa Rica PES: Watershed Services



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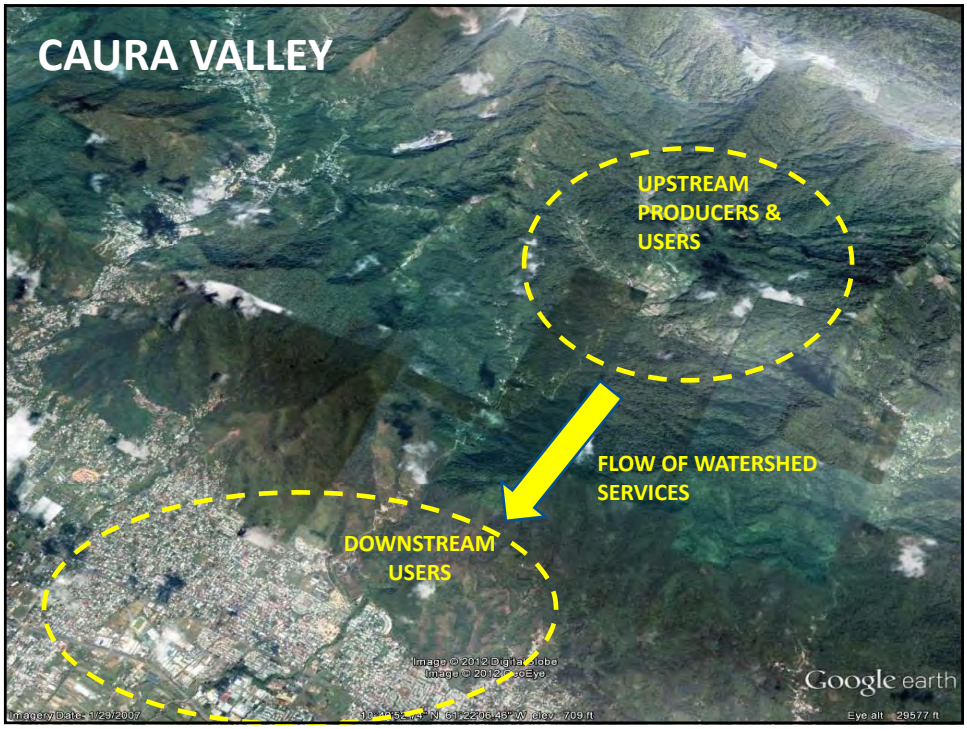

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Looking Back and Moving Forward:

SCENARIO DEVELOPMENT TO AID DECISION MAKING

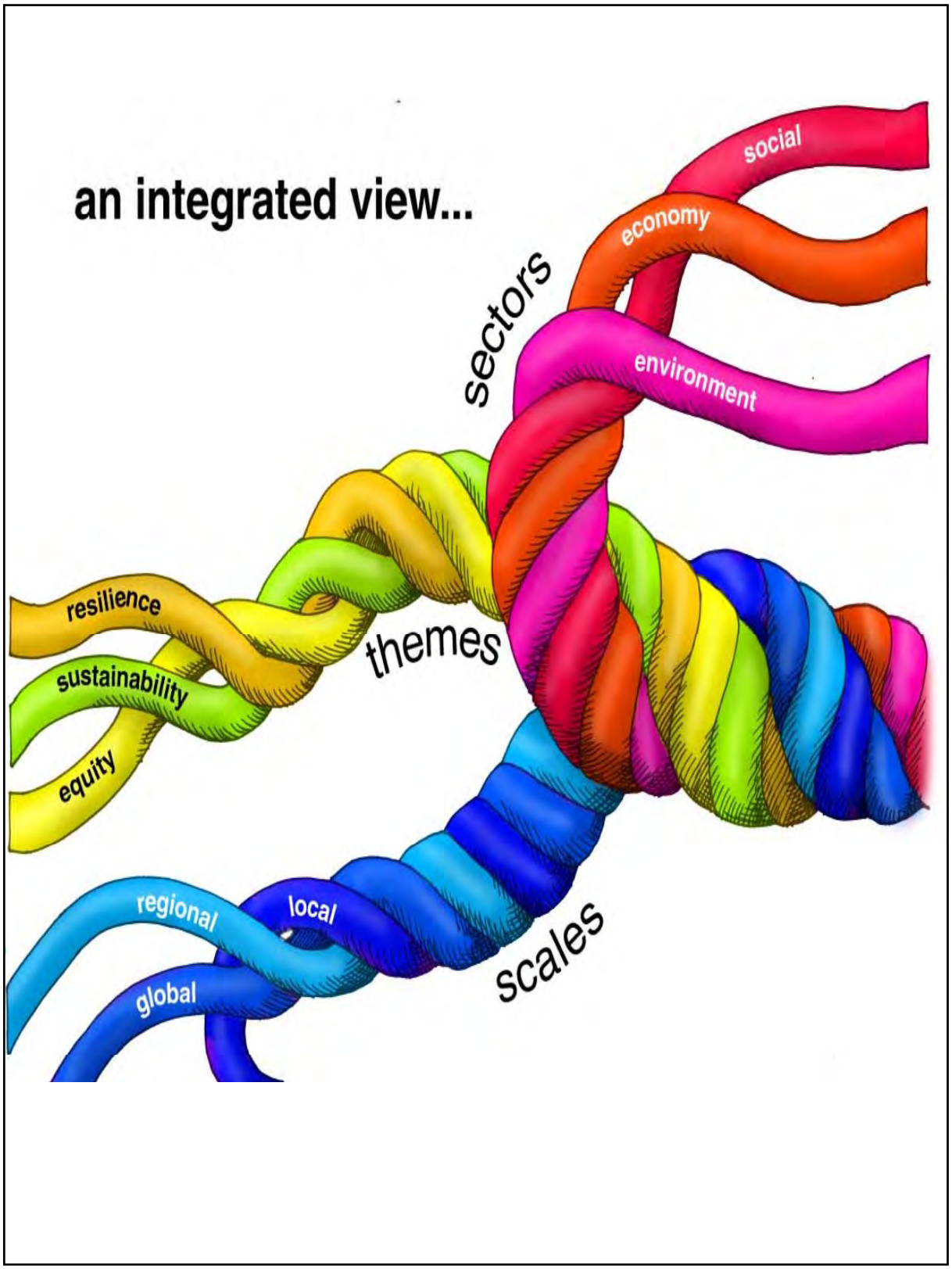
Professor John Agard
Dept. of Life Sciences
University of the West Indies

What Scenarios Are

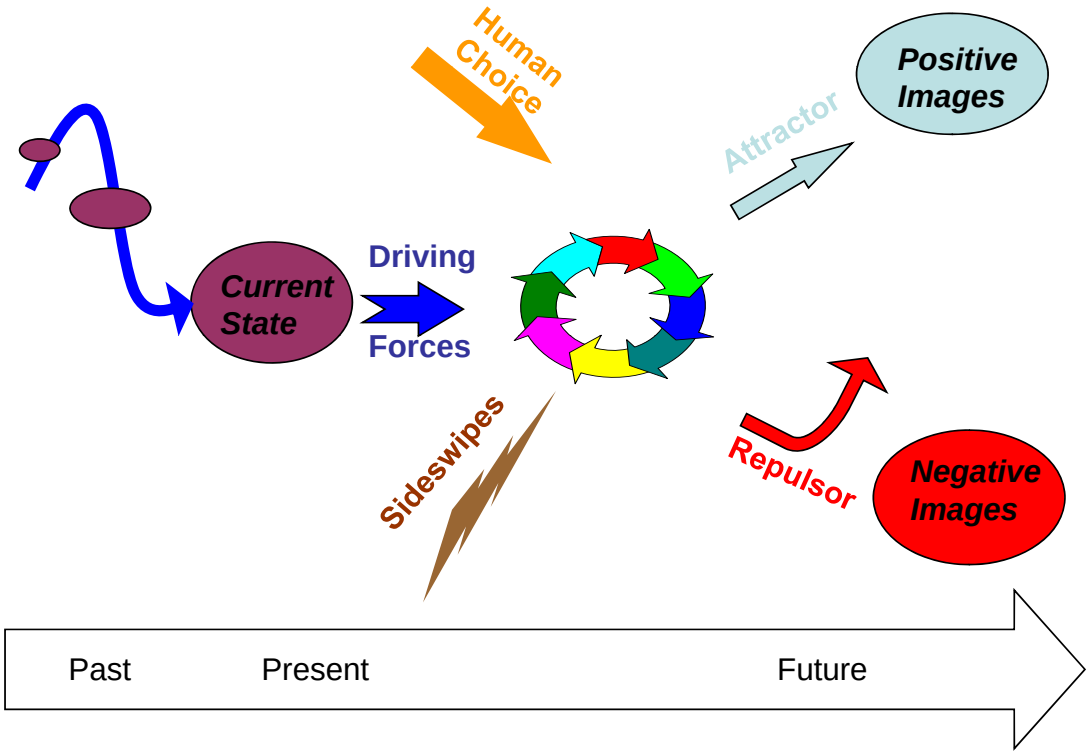
"Scenarios are descriptions of journeys to possible futures. They reflect different assumptions about how current trends will unfold, how critical uncertainties will play out and what new factors will come into play." (UNEP, 2002)

What Scenarios Are Not

"It is now generally accepted that scenarios do not predict. Rather, they paint pictures of possible futures and explore the differing outcomes that might result if basic assumptions are changed." (UNEP, 2002)


an integrated view...
social
economy
sectors
environment
resilience
themes
sustainability
equity
regional
local
scales
global

SCENARIO DYNAMICS



Example Scenario Exercises

- Mont Fleur – South Africa
- Global Scenarios Group
- Caribbean Sea Ecosystem Assessment (CARSEA)

Mont Fleur – South Africa Background

- *What will South Africa be like in the year 2002? What will the path look like between 1992 and 2002?*
- The project brought together a diverse group of 22 prominent South Africans—politicians, activists, academics, and businessmen, from across the ideological spectrum.
- It took place in 1991-2, during the period between February 1990, when Nelson Mandela was released from prison, and April 1994, when the first all-race elections were held.

Mont Fleur – South Africa The Scenarios

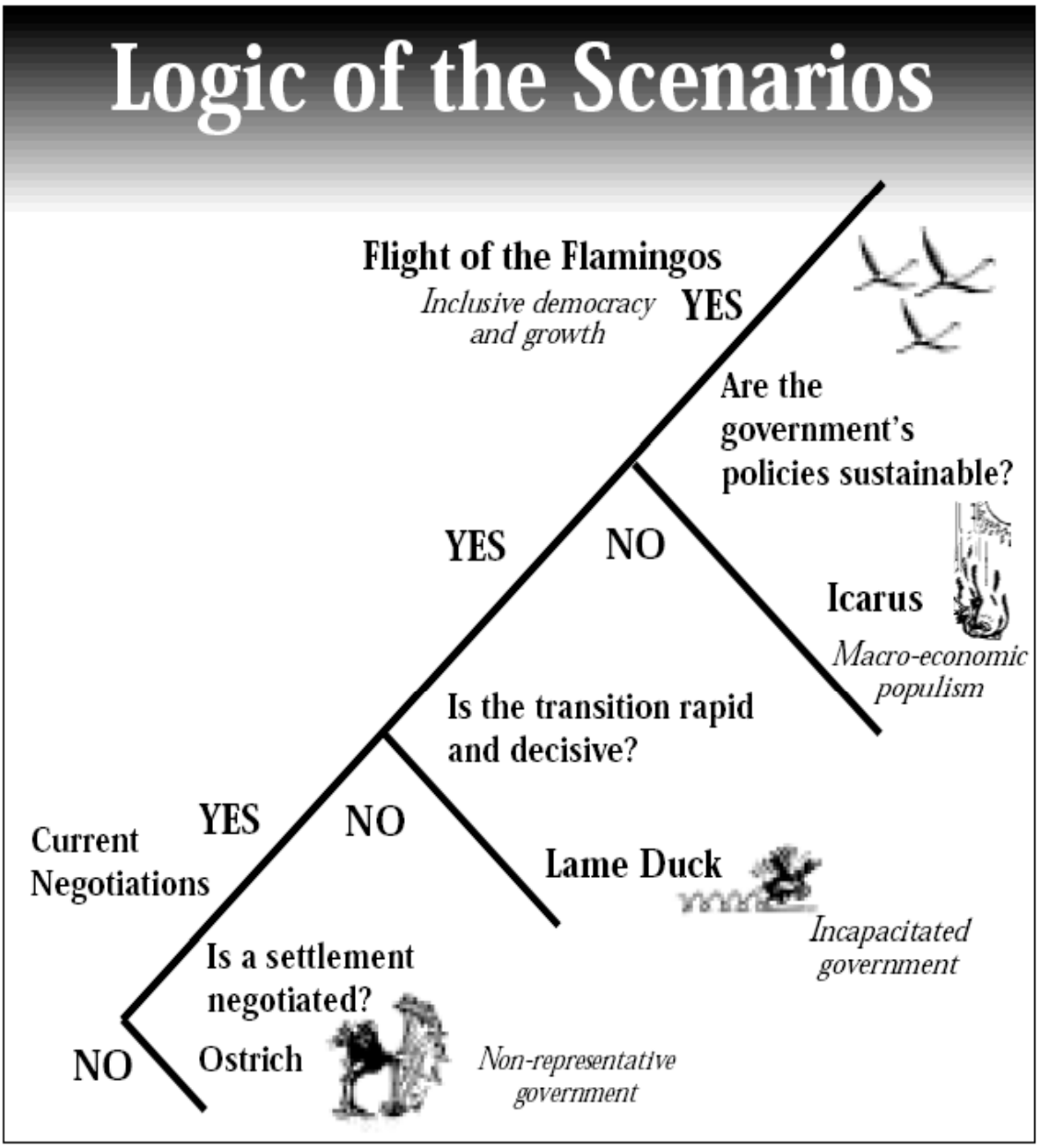
1. Ostrich
in which a negotiated settlement to the crisis in South Africa is not achieved, and the country's government continues to be non-representative

2. Lame Duck
in which a settlement is achieved but the transition to a new dispensation is slow and indecisive

3. Icarus
in which transition is rapid but the new government unwisely pursues unsustainable, populist economic policies

4. Flight of the Flamingos
in which the government's policies are sustainable and the country takes a path of inclusive growth and democracy.

Mont Fleur – South Africa The Scenarios



Mont Fleur – South Africa Representation

Lame Duck Scenario

Long transition
- Political settlement
- All party coalition
- Sunset clauses

Lowest common denominator decision-making
- Indecisive policies
- Purports to respond to all, satisfies none

Uncertantity because of long transition
Investors hold back

Insufficient growth

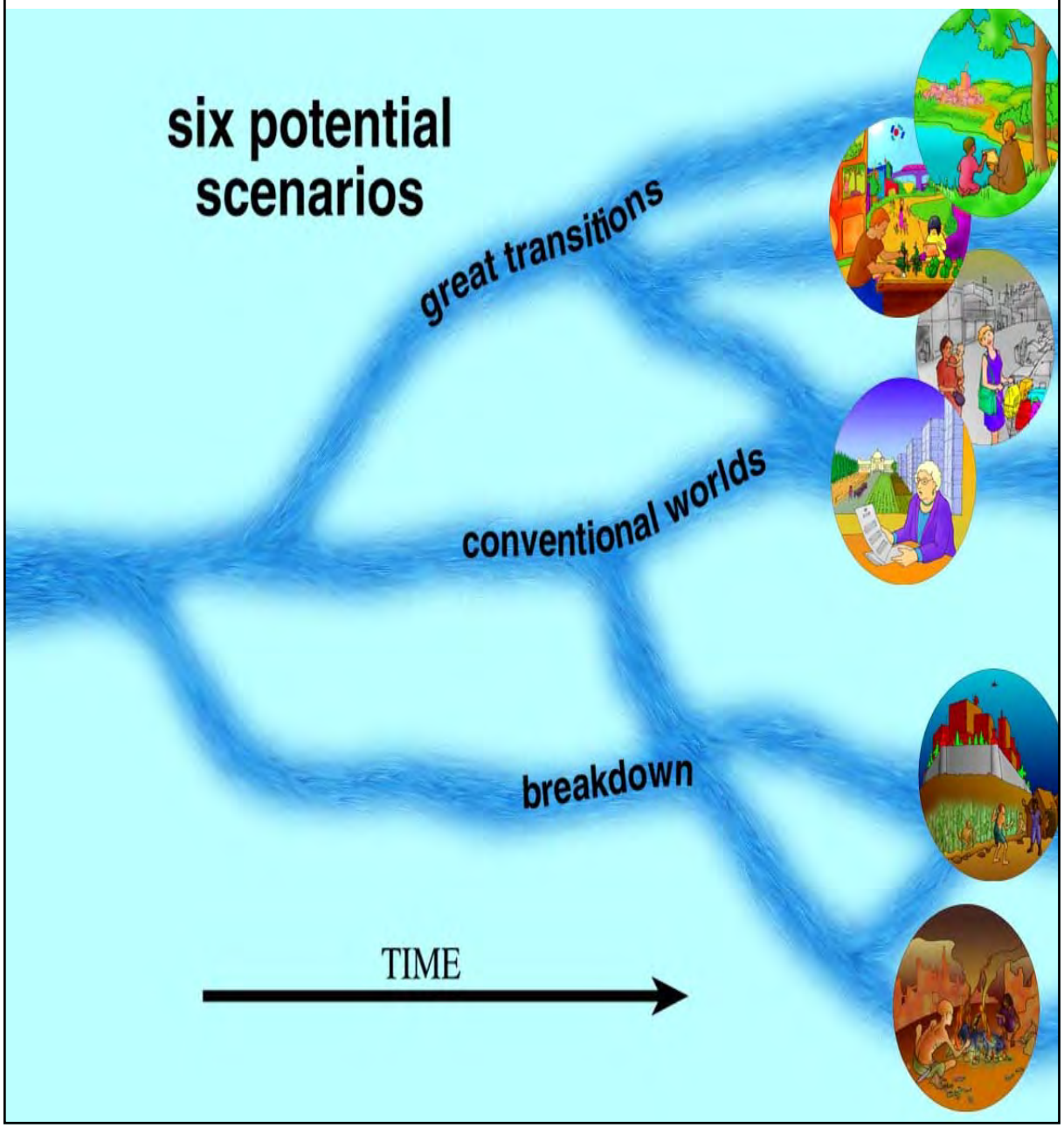
Social crisis inadequately addressed

The vicious circle of political, economic and social crises worsens

Global Scenarios Group Background

- *What are the requirements for a transition to economic, social, and environmental sustainability?*
- Work of the Global Scenario Group, which was convened in 1995. This is a group of approximately 10 multi-disciplinary international experts with extensive expertise in research on sustainability.

Global Scenarios Group The Scenarios



Global Scenarios Group The Scenarios

Conventional Worlds

Market Forces Scenario

Market optimism
hidden and enlightened hand

Policy Reform

Stewardship
through better technology and management

Global Scenarios Group The Scenarios

Breakdown

Fortress World

Social chaos

human nature is nasty,
order through strong leaders

Breakdown

Population and Resource Catastrophe
existential gloom

Global Scenarios Group The Scenarios

Great Transitions

Eco-communalism

Small is beautiful

goodness of man,
evil of industrialism

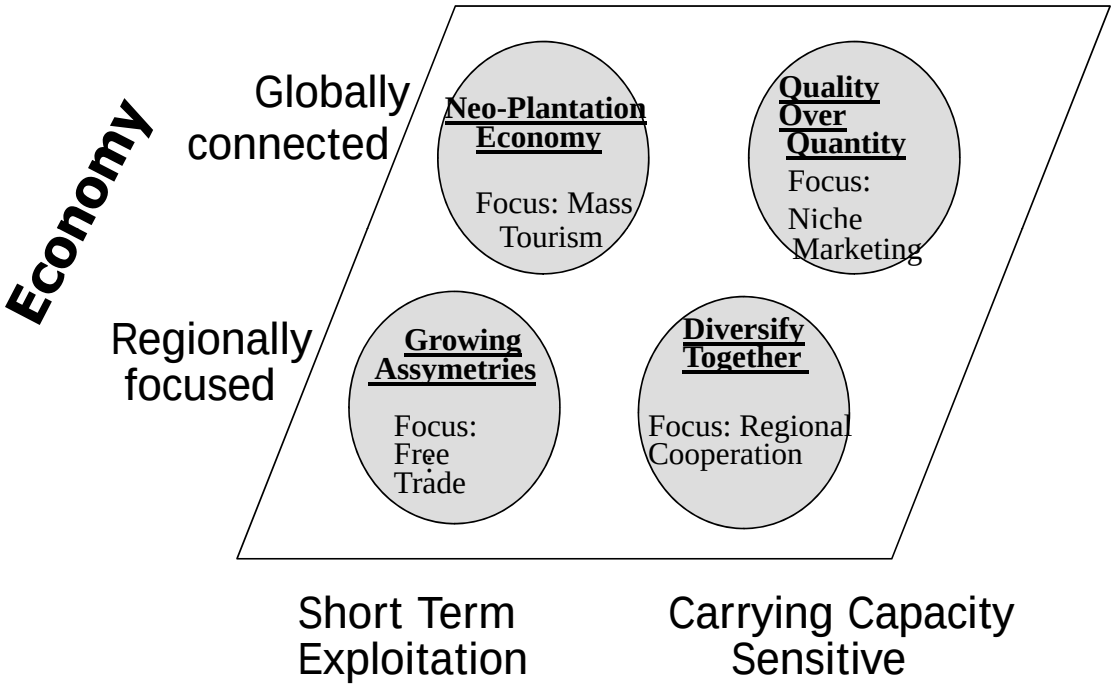
New Sustainability

Progressive social evolution

human solidarity and
the art of living

CARIBBEAN SEA ECOSYSTEM ASSESSMENT (CARSEA)

Scenario Storylines



Approach to ecosystem services

Tools and Methods for Incorporating Ecosystem Services into

Development Decision-Making: Caura Valley

6 and 7 November 2012

Visioning Exercise: Small Group Activity Instructions

Purpose: To develop a vision for Caura in 2022 that is shared by all members of the group in which ecosystem health and human well-being are balanced and your sector (agriculture or tourism) supports sustainable livelihoods.

Time: 60 minutes

Materials: Flip chart paper, markers, craft materials, positive thinking and creativity!

Instructions

- Take the first five minutes of the working session to brainstorm what you feel should be included in the vision for a sustainable sector. As you come up with your ideas, it could be useful to think about these questions:

    - If your sector (tourism/agriculture) were supporting a good quality of life and sustainable livelihoods in Caura in 2022, what would be happening?

    - What would you like your children or grandchildren to be saying about the state of the natural environment and your sector (tourism/agriculture) in Caura in 2022?

- Capture everybody's remarks on a flip chart sheet. Remember, this is brainstorming; there are no wrong or right answers. All group members' remarks should be recorded – this will be part of the group memory that will be helpful throughout the visioning process.

- At the end of the brainstorming session, pick out the common values, themes and ideas. Discuss these, come to an agreement on the common elements of vision for the sector within the group and write them down. If there are areas that you cannot agree on for now, just note them on a piece of flip chart paper to present later.

- Once you feel you can move forward on the common elements, develop your vision the Caura Valley and write it down. Remember your vision is an end state – the final result – or where you would like to see your sector in 2022. The vision is not the practical steps to get there.

- As a group, you must now decide how you are going to communicate your vision to the other workshop participants. Let your creative juices flow freely!
    - You may use the craft materials provided to create a three-dimensional model that captures your common vision for sustainable sector; you don't have to limit yourselves to the material provided you can go outside and gather additional material, such as small stones, seeds, etc.

    - You may use the paper and markers to draw your vision;

    - You may make a presentation using, song, dance and/or drama.

  Your only limitation is your imagination.

- You will have ***seven minutes*** to present your vision to the other participants when we come back together in plenary.

Tools and Methods for Incorporating Ecosystem Services into Development Decision-Making: Caura Valley

6 and 7 November 2012

Evaluation Results

Please take a few moments to answer the questions below to help us refine the workshop.

	1= Strongly disagree	2= Disagree	3= Neither agree nor disagree	4= Agree	5= Strongly agree	No Response	Total
Workshop Objectives							
1. I was well informed about the objectives of this workshop.				3	4		7
				43%	57%		100%
2. This workshop lived up to my expectations.				3	3	1	7
				43%	43%	14%	100%
3. I feel the workshop met its objectives.				4	3		7
				57%	43%		100%
Workshop Content							
4. Use the numbers 1 to 5 to rate how you feel about the level of the presentations and material covered: 1= Too complex ←→ 5= Very straightforward				3	3	1	7
				43%	43%	14%	100%

5. What is least valuable about this workshop?

- National Accounts Presentation
- Not enough stakeholders and community members
- Everything was valuable

6. What is most valuable about this workshop?

- Discussions about the Caura Project
- P.E.S and visionary
- What is the Pro Ecoserve objective. How it impacts on the Caura Valley and being cognisant of how and what role the GFEU can play in the development.
- Everything
- Workshop Tour. Interaction

7. How would you improve this workshop?

- One more day
- By having greater participation (Larger group)
- More days.
- Additional day
- Greater depth needed on the issues
- More stakeholder involvement. Longer workshop period to “move into” issues/topics

8. Has the workshop given you new viewpoints and insights? *(Check one)*

6 To a great degree	___To a minimal degree
___To a moderate degree	___Hardly at all
1 Somewhat	___No response

9. What is one thing that you will apply from the workshop?

- Visionary, interactive tools
- Impact of climate change
- Applying education to the community
- Scenarios
- Interactive approach to looking at the application. Process for funding. Create involvement of stakeholders

10. What would prevent you from applying the ideas discussed in this workshop?

- Complexity and inexperience
- Nothing
- Institutional processes

Please rate each of the following:							
	Poor	Fair	Good	Very Good	Excellent	No Response	Total
11. Venue and administrative arrangements							
a. Field trip arrangements					3	4	7
					43%	57%	100%
b. Meeting rooms			3	1	2	1	7
			43%	14%	29%	14%	100%
c. Documentation			2	1	2	2	7
			29%	14	29%	28%	100%
d. Refreshments		1	1	1	3	1	7
		14%	14%	14%	43%	14%	100%
14. Presenters' skills							
a. Presented topics clearly				3	3	1	7
				43%	43%	14%	100%
12. Facilitators' skills							
a. Maintained a dynamic and interesting atmosphere				3	3	1	7
				43%	43%	14%	100%
b. Allowed for sufficient discussion and encouraged participation			1	2	3	1	7
			14%	29%	43%	14%	100%
c. Brought each discussion session to a satisfactory conclusion				3	3	1	7
				43%	43%	14%	100%

13. Any other comments or feedback?

- Excellent approach to the workshop
- Continuity
- Thank you for allowing me to be part of this useful workshop. It was very educational.