

Ecosystem services and livelihood opportunities for Indigenous rural communities in savanna landscapes

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Project Objectives

In this inaugural workshop, held in Darwin in April 2012, we aimed to address sustainable development challenges and opportunities facing Indigenous peoples in savanna landscapes of northern Australia and adjacent regions in eastern Indonesia, Timor Leste, and Papua New Guinea (PNG). In recognition of significant climate change and other developmental challenges in this culturally diverse region, and contemporaneously, potentially significant opportunities afforded through development of novel carbon mitigation and related ecosystem services economies, key objectives of the workshop were to:

- Articulate key contemporary terrestrial land use management challenges facing Indigenous people in the four regions;
- Explore opportunities afforded through new economies related to climate change mitigation, carbon trading, and ecosystem services to help address identified challenges;
- Develop an understanding of opportunities afforded through international instruments and current initiatives (e.g. REDD+ and related);
- Commence assessments of the value of ecosystem services to be derived from Indigenous lands through formal scenario modelling exercises; and
- Gauge the interest of participants in maintaining an ongoing regional dialogue concerning the potential for application of Ecosystem Services (ES) and Payment for Environmental Services (PES) in regional settings.

Methods

Under the expert guidance of Professor Bob Costanza and Dr Scott Heckbert, the workshop initiated formal Ecosystem Services (ES) and Payment for Ecosystem Services (PES) scenario modelling assessments pertinent to three regional situations:

- Northern Australia—greenhouse gas emissions abatement and associated sequestration in living biomass, associated with changed savanna burning practices
- Timor (both West and East)—catchment management issues under increasing population and development pressures
- Trans-Fly region, PNG—forest values under developing logging pressures

Focused discussion was also given to develop an understanding of customary and other institutional governance requirements in respective regional settings.

Major Findings

- Our initial trialling of formal scenario modelling showed substantial promise for better informing local communities and policy development, but clearly requires more detailed inputs from, and engagement with, a broader range of relevant community stakeholders in respective regional settings. Substantial relevant data are available for northern Australia (e.g. Heckbert *et al.*, 2012), but further detailed information is required for the other regions. It is proposed to assemble such datasets as part of further regional workshops to be undertaken in the near future (see below).
- Workshop discussions revealed that understanding and accommodating customary and other institutional governance arrangements is essential for developing and implementing successful PES projects. For example, considerable international experience shows that lack of formal recognition of indigenous title and communal tenure arrangements pose considerable challenges for effective implementation of PES projects (ITTO 2011). These issues are prevalent in all focal regional settings, but with the notable caveat that nearly all land in PNG is held privately under Indigenous communal tenure arrangements.
- Participants expressed a keen interest in (1) maintaining an ongoing dialogue on the potential for ES and PES in regional savanna landscapes, and (2) further developing regional scenario models. Participants proposed that follow-up focused workshops should be held if possible in eastern Indonesia / Timor Leste, and PNG.

PARTICIPANTS INSTITUTIONS

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Key papers or products

Building on the findings outlined above, we have:

- Undertaken a follow-up ES and PES workshop in PNG in October 2012, with funding support from PNG Sustainable Development Program Ltd (PNGSDP), the Institute of Advanced Studies of the United Nations University (UNU), WWF Western Melanesia Program, and the Western Province Government. The workshop reviewed examples of PES programs currently being undertaken throughout PNG, and examined prospects for PES projects especially in forested and savanna landscapes of the Trans-Fly region (Figure 1).

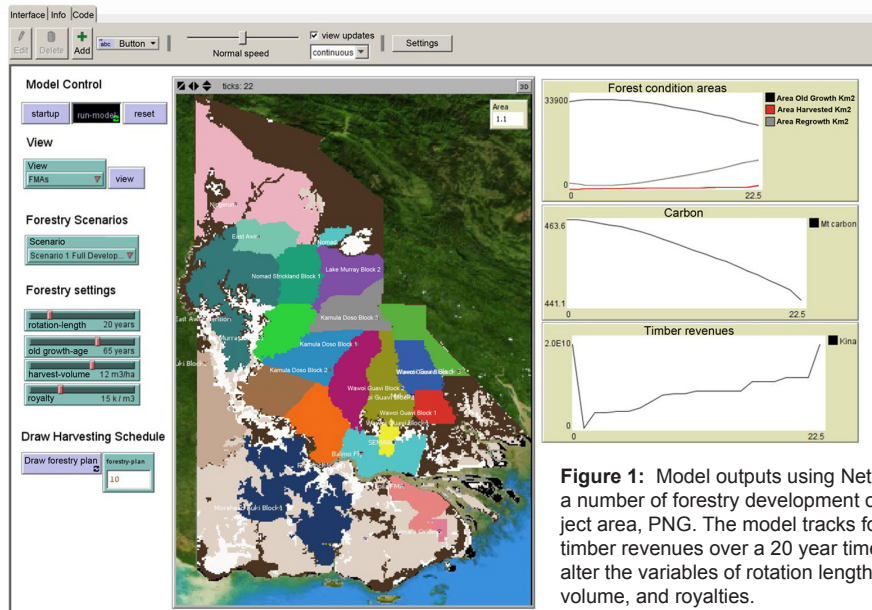


Figure 1: Model outputs using NetLogo software incorporating a number of forestry development options for the TransFly project area, PNG. The model tracks forest condition, carbon and timber revenues over a 20 year time-frame, with the capacity to alter the variables of rotation length, time to full growth, harvest volume, and royalties.

- Undertaken a follow-up ES and PES workshop in Timur Barat (West Timor) in April 2013, with funding support from Australia's Crawford Fund. The workshop focused on PES opportunities for catchment management issues in highly disturbed catchments in densely populated savanna landscapes typical of eastern Indonesia and Timor Leste.
- Commenced work on the development of papers addressing:
 - (i) global opportunities and challenges associated with implementing savanna burning projects for the benefit of Indigenous and local communities (Russell-Smith *et al.*, Climatic Change, in press)
 - (ii) Ecological benefits and PES opportunities associated with enhanced fire management in northern Australia, particularly in relation to the Indigenous estate (Edwards *et al.*, in prep.)
 - (iii) a synthesis of ES and PES opportunities and institutional / governance challenges for indigenous communities in savanna landscapes, focusing on the four national jurisdictions involved with the inaugural workshop
 - (iv) detailed modelling outputs in support of the synthesis paper.

How will this affect Australian ecosystem science and management?

We consider this undertaking to be a landmark achievement, bringing together social, economic and ecological science frameworks to address chronic savanna land use management and socio-economic issues, in a significant inter-regional / -national collaboration. PES institutional frameworks typically address and involve developing world economies with a heavy emphasis on biodiverse- and carbon-rich tropical forest systems (e.g. Wunder 2007; Engel and Palmer 2008; de Koning *et al.* 2011). Building on over a decade of applied research with the development of savanna burning methodologies and projects in fourth-world (i.e. third world conditions within a developed nation economy) northern Australia (e.g. Russell-Smith *et al.* 2009), the present initiative aims to explore, learn from and encourage implementation of PES projects in adjacent nations and flammable savanna landscapes generally.

A year since the holding of the initial ACEAS PES workshop, it is gratifying to note that the regional partnership continues to develop, including with the mooted appointment of a resource economics modeller position tasked with exploring the above regional ES and PES options.

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