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A pilot project for indigenous forest reversion

Jason Funk
Motu Economic & Public Policy Research, Wellington

Suzi Kerr
Motu Economic & Public Policy Research, Wellington

Joanna Hendy
Motu Economic & Public Policy Research, Wellington

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Jason Funk, Suzi Kerr, Joanna Hendy
Motu
Economic & Public Policy Research
Wellington

Abstract

This paper describes preliminary work on establishing a pilot project for carbon sequestration. The project is intended to simulate the structure of the Permanent Forest Sinks Initiative, a program that may extend to the national level under the supervision of the Ministry of Agriculture and Forestry. In the process of establishing the project, we will identify opportunities and barriers for landowners to engage in the management system of "carbon farming". We will also use the results of the process to inform policymakers of potential improvements to the Permanent Forest Sinks Initiative and to demonstrate to landowners the benefits of this management system.

Introduction and Justification

As a signatory to the Kyoto Protocol, New Zealand has agreed to limit its greenhouse gas emissions to 1990 levels during the two Kyoto commitment periods, 2008-2012 and 2013-2017. The recent revision of emissions estimates released a few months ago makes it all the more urgent to develop tools for meeting these commitments. One mechanism that has been proposed by the government is the creation of new, permanent forests for generating carbon credits. The policy, known as the Permanent Forest Sinks Initiative (PFSI), would offer landowners tradable carbon credits for land they set aside for forest regeneration. Presumably, landowners will trade these credits on international markets.

The complex details of administering the PFSI are currently being worked out in the Indigenous Forestry Unit of the Ministry of Agriculture and Forestry (MAF). However, as with the creation of any new policy initiative, stakeholders on both sides have been quick to realize the potential implications. Foresters, landowners, farmers, government agents, and policymakers are all taking steps to protect themselves from liabilities while maximizing their access to benefits. However, few resources are going into an analysis of how the structure of the policy will affect these stakeholders or how alternative structures might impact them.

Therefore, in parallel with national-scale analysis of environmental policy on land use, our research team has begun a pilot project to investigate the dynamics of decision-making among landowners. The project complements the national-scale work by

focusing on the decision-making environment of individual landowners and how environmental policies such as the PFSI may affect that environment.

Our conceptual model of the decision-making environment is organized into three areas, or dimensions. First, the landowner must consider the conditions of the land itself: its biophysical capacity to be productive under different land uses. Second, the landowner ought to consider the condition of the market: the economic value that can be generated by different land uses. Third, landowners' decision is embedded within the social, cultural, political, institutional, and demographic conditions of the owners themselves. The introduction of a new political avenue to economic opportunities will change this decision-making environment. But the magnitude of the change will depend on the structure of the policy. It will also be constrained by the biophysical capacity of each land block for which a landowner makes decisions.

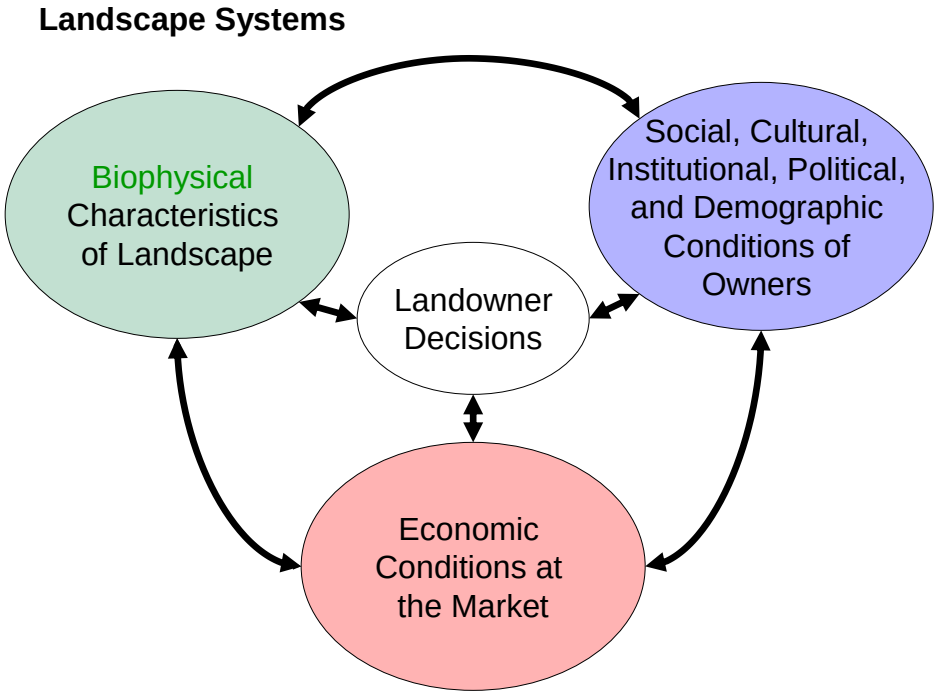

Fig. 1. Conceptual model of landowner decision-making within landscape systems.

The third dimension of decision-making encompasses the specific tenure structure of landowners or anyone who makes decisions about land use. In New Zealand, the tenure structure of Maori land is often much different from other land. This tenure structure alters the decisions on that land in measurable ways. On the North Island, where Maori land is a significant percentage of private land, these decisions may have a significant impact on the uptake of any public policy related to land use. We have chosen to focus on Maori land in the Gisborne/East Cape area (GEC) for the pilot project in order to address this issue in more detail.

Purpose, Goals, and Research Questions

Purpose of the project

The purpose of this project is to create a trial of the contract process for carbon sequestration on private land.

Goals

- To initiate a project on the ground and see it through early stages.
- To coordinate opportunities for landowners.
- To identify barriers to efficient contracts for carbon credits.
- To inform policymakers and agencies of barriers and opportunities.
- To serve as a demonstration and learning tool for landowners.

Research Questions

For this project, the motivating research questions are as follows:

Where carbon sequestration appears to be economically competitive, are there barriers to uptake?

What are the pathways through barriers? In particular, can opportunities be aligned to enhance the appeal of "carbon farming"?

In the case of multiple-ownership, especially Maori land, can contract process be streamlined to reduce transaction costs?

Opportunities and Barriers of "Carbon Farming"

Managing land to generate carbon credits requires setting it aside from other management activities, closing the door to many benefits. However, carbon sequestration may be just one of many benefits available from a management system of "carbon farming". Such a system is compatible with several sources of income and value that are largely unavailable to other land uses. These benefits that apply to the GEC are listed below:

Opportunities compatible with native forest reversion

1. Carbon credits
2. East Coast Forestry Program
3. Nga Whenua Rahui
4. Tourism
5. Hunting
6. Firewood
7. Manuka oil and honey
8. Catchment protection

9. Kaitiakitanga: the Maori concept of honoring their ancestors and descendents through good stewardship of the land.

On the other hand, a system of carbon farming faces its own unique barriers. These include the factors on the following list:

Potential barriers to native forest reversion

1. Competing land uses
2. Bureaucratic hurdles
3. Slow decision-making process
4. Uncertainty of returns
5. Perception of scrub as "bad management"
6. Inability to align incentives
7. Spatial incompatibilities
8. Rangatiratanga: the Maori right of self-determination or sovereignty in decision-making about their lands.

Each landowner/decision-maker must evaluate the importance of these opportunities and barriers in comparison to the other possible land uses. In all cases, the relative risks associated with each land use must also be accounted for. In the GEC, competing land uses include sheep and beef farming, plantation forestry, other set-aside programs (Nga Whenua Rahui and Queen Elizabeth II), the East Coast Forestry Project, and other activities. In some cases, these land uses are exclusive, but in other cases they may over lap each other or provide complementary benefits. For instance, reversion of native forests for "carbon farming" can also qualify for the East Coast Forestry Project where reversion occurs on land targeted for that project. These separate land uses can also be used to create a portfolio of benefits on a single block of land in order to diversify income sources and insure against risks.

Role of the Pilot Project

Ongoing work of the research team has focused on two areas: 1. the national- and regional-scale economic factors that drive land-use decisions, and 2. the spatial mapping of biophysical features that determine the capacity of land for different productive uses. These two research programs have created an understanding of how economic and biophysical factors affect landowners' decisions. The pilot project, then, is a first step in examining the third component of our conceptual model: how conditions of the landowners affect their decisions. In particular, we are focusing on how the decision environment affects the ability of decision-makers to utilize opportunities. We are using the Pilot Project to reveal the nature of the decision environment and the possible barriers that face decision-makers. The goal, of course, is to identify how public policy can create pathways through those barriers. Thus, the project has implications for both policy-makers and landowners (Fig. 2).

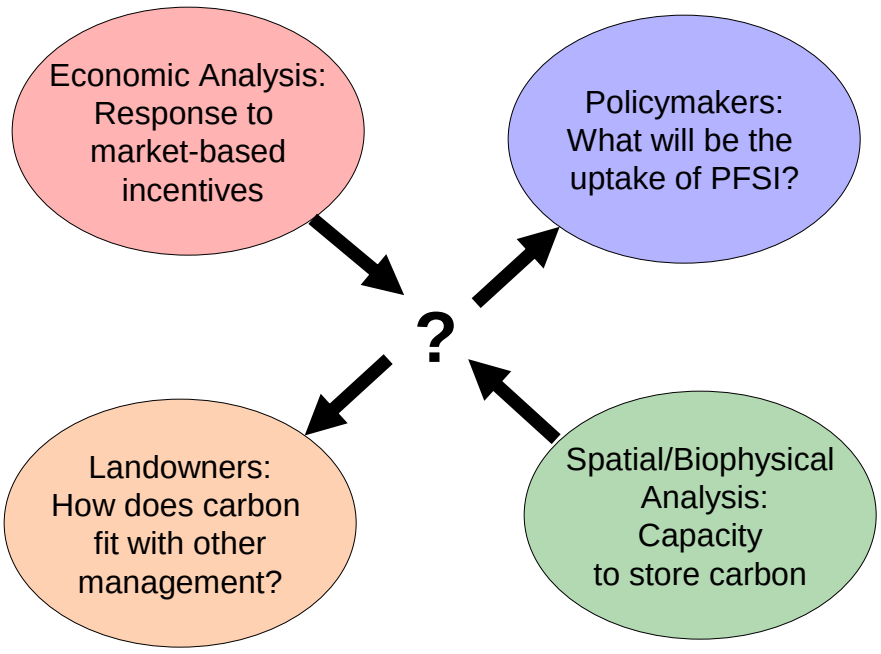

Fig. 2. The Pilot Project complements other research programs and addresses remaining questions relevant to policy-makers and landowners.

Steps of the Pilot Project

The Pilot Project will proceed through five steps:

1. Identify land blocks that are eligible for PFSI and are "good" targets.
2. Approach landowners and engage in discussion of opportunities and trade-offs.
3. Present multiple contract arrangements and reach an agreement on contract specifications.
4. Establish the project and begin payments as specified in the contract.
5. Evaluate the results and present to funders and policymakers.

Contract goals

The goals of the contract are as follows:

○ Payment structure that is straightforward and attractive to landowners
○ Limited-term contract (35 years) with provision to opt-out by refunding payments
○ Identify strategies for buffering landowners against risk and uncertainty
○ Include provisions for allowing other sources of income and protections against carbon loss
○ Lay the groundwork for landowners to capture future values of biodiversity, erosion reduction, etc.

Identifying targets using GIS

The first step of the project is to identify eligible land blocks that are likely to provide useful information during the contract process. We identified the following criteria for selecting blocks within the GEC:

Conditions:
- ○ Maori block
- ○ Multiple decision-makers
- ○ Existing decision structure in the form of a trust
- ○ Qualifies for Kyoto forestry
- ○ > 50 ha conversion

Analysis using a geographic information system (GIS) identified 76 blocks that were likely to meet these criteria. Discussions with local authorities and researchers quickly identified three of these blocks that had high potential for success.

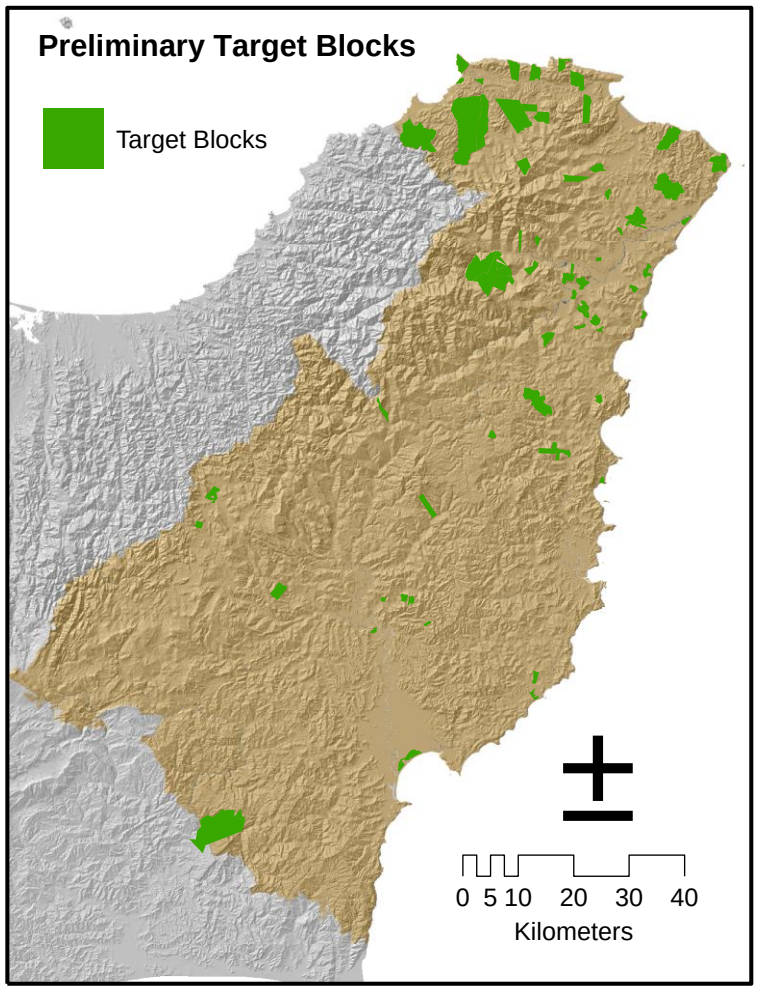

Fig. 3. Target blocks identified by GIS analysis.

The characteristics of these blocks are listed below. For confidentiality reasons, the exact details of the blocks has not been revealed.

Block 1
Contact point: Manager
Size: ~ 450 hectares
Current Activities: Sheep/beef is main source of income
Much already in native forest
Up to 100 ha marginal pasture
Notable Features: Potential for tourism, honey production
Small number of trustees and shareholders

Block 2
Contact point: Trustee
Size: ~ 100 hectares
Current Activities: Mostly sheep/beef pasture with patches of manuka and native forest
Notable Features: Block adjacent to and visible from marae
Relatively small number of trustees and shareholders

Block 3
Contact point: Multiple interests
Size: ~ 175 hectares
Current Activities: Mixed existing management
Notable Features: Part of a 1400 ha catchment targeted for erosion control
Already qualifies for East Coast Forestry Project
Downstream infrastructure vulnerable

Next steps:

After the identification of several target blocks, work will continue through the remaining phases of the project. The next steps to complete the project are as follows:

- ○ Formulate contract options, in conversation with landowners
- ○ Reach agreement on contract and sign
- ○ Establish project
- ○ Deliver payments
- ○ Report results

Conclusion

The process of establishing this pilot project is expected to answer questions about the decision-making process relevant to uptake of the Permanent Forest Sinks Initiative.

However, it is also likely to raise new questions and suggest revisions to the current policy structure. We intend to carry out the project in a way that is most informative to all stakeholders involved.

Research Team:
Garth Harmsworth & Troy Baisden, Landcare Research
Suzi Kerr & Joanna Hendy, Motu Economic and Public Policy Research

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