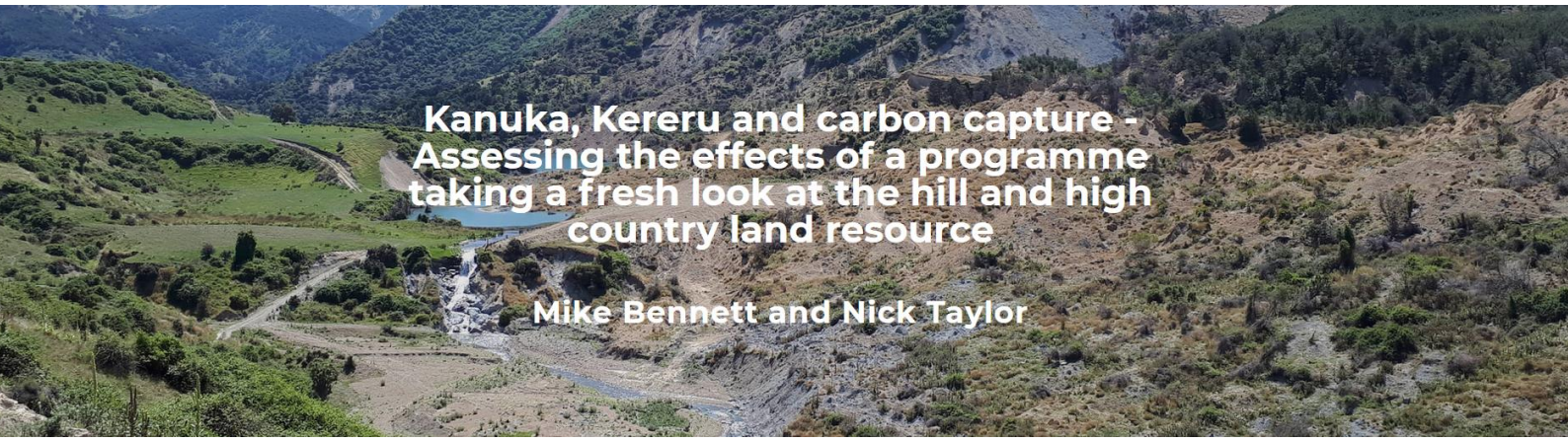

Kanuka, Kereru and carbon capture - Assessing the effects of a programme taking a fresh look at the hill and high country land resource

Mike Bennett and Nick Taylor

Introduction

The Post Quake Farming Project supports adaptation of the hill and high- country farming community to changing circumstances, including climate change. We discuss the role of impact assessment in the success of community centric approaches to project management, including insights gained through this project.

At midnight on 16 November 2016 a magnitude 8 earthquake event occurred in North Canterbury and South Marlborough. It severely affected hill and high country farmland and communities, with very significant damage to land and farm infrastructure such as farm houses and buildings, fences, water systems and access tracks. Some farmers describe the setbacks as losing years of improvements on their farms. They made extensive repairs to fences, tracks, water supplies, buildings and homes, while waiting for repairs to roads and power through rural areas. A less visually obvious impact of the earthquake was the intense stress caused by sudden loss of rural water schemes in the last two weeks of spring and the loss of major road access for several months.

The response by farm families, rural communities, councils and government agencies was substantial and absorbed considerable community resources. Friends, families, former employees, local councils, MPI staff, NGOs and rural professionals familiar with the area pulled together in the days after the event. The generosity and community spirit which was apparent was a humbling illustration of how established communities (rural or otherwise) behave when subject to an adverse event.

This effort took its toll, however, leaving farmers and farm families at a low point in terms of financial, physical and emotional resources as they moved into the recovery phase. It became clear to community leaders and locally-based agency staff that a longer-term support package would be required. This package would need to recognise the skills and understanding that farmers have to manage land and complex land use decisions, and support information transfer and actions to achieve a workable programme.

A programme of adaptation in farming systems and rural communities

The Post Quake Farming Project (PQFP) is a programme of managed change forming part of the earthquake recovery response for farming communities. The primary objective of the PQFP is to build a prosperous, ethical, and enduring regional economy around multiple land-based enterprises across the PQFP area, while recognising the skills and knowledge of farmers must be central to the response. This is a farmer-led programme funded by the Ministry of Primary Industries Earthquake Recovery Fund under similar terms to a sustainable farming project. Beef and Lamb NZ and Environment Canterbury are providing in-kind support with administration and technical expertise. The basic premise of the programme is that by optimising the full range of farm outcomes - economic, physical, biological, social – we can expect enhanced community wellbeing. The local farming community is a key component with seven farmers on the project's Governance Group.

PQFP was set up at the beginning of 2018 by Beef + Lamb NZ with support from Environment Canterbury. The programme was very challenging to set up for a number of reasons:

- The variety of community actors (agencies and rural community leaders) involved.
- The complexity of the hill and high-country farming environment.
- Constant change in the community situation and community needs (e.g. as road access was restored and insurance claims were negotiated), and readiness to engage after such a damaging event.
- Difficulty aligning project objectives with activities which could actually be of use in helping farmers move forward, many of whom were not ready to engage with a project of this type so soon after the event.

Furthermore, as the management team and Governance Group's understanding of stakeholder requirements developed, it became apparent that to align farmer needs and programme activities, and to maximise benefits from the programme, the activities needed to go well beyond issues of earthquake recovery. In spring 2018, the project was therefore revised to be much more about assisting adaptation to the future in the context of a physically, economically and socially complex hill and high country farming environment subject to numerous pressures including climate change. For the PQF project to be beneficial it had to go well beyond the direct effect of the earthquakes.

A revised project goal was developed to anchor PQF activities, to build a prosperous, ethical, and enduring regional economy around multiple land-based enterprises across the Post Quake Farming Project area, by considering the objectives of:

- Optimisation – Achieving optimal returns from land resources in the immediate term
- Farm future – Developing new enterprises to optimise use of land resources in the long term
- Promotion – Effectively linking the story of our land and our people to our markets
- Wellbeing – Looking after our people so they can have a prosperous future.

A project ethos emerged of an adaptive approach to utilising the land resource, while building resilience to further natural hazards, climate change and weather events. Also, new funding opportunities, and increasing regulatory complexities, were evident from government responses to climate change, including revisions to the Emissions Trading Scheme (ETS) and the Billion Trees Programme (BTP), alongside new government policies around indigenous biodiversity and also freshwater management.

The overall result is a project which, rather than simply focusing on the earthquake and trying to 'take things back to the way they were', seeks to actively assist the farming community to prepare for the future and enable them to meet the various challenges that arise as they interact with the land resource which they control.

Photo sourced from https://www.molesworthtours.co.nz/gallery

The activities of the PQFP are designed to result in positive changes on multiple farm properties and also off farm. They include a series of on-farm assessments and associated extension activities. Specific work areas include:

- integration of exotic and actively managed native forestry into grazing systems;
- understanding the benefits of carbon capture and trading through the ETS;
- understanding the restoration potential of scrublands and regenerating native forest with improved biodiversity through ecological assessment and farm planning;
- understanding the potential for diversifying into horticulture and agri-tourism, and 'telling the story' of the hill and high country farming community and the provenance of their products.

Farming communities face many pressures of adaptation to climate vagaries, including building resilience to extreme events and taking advantage of many new opportunities, from new policies and regulations, and from government programmes. Adaptation to climate change is built into the programme throughout, with attention to the potential for carbon capture and enhanced biodiversity. Experience has shown that a farm planning approach is essential to enhanced indigenous biodiversity on farms (Maseyk, et al., 2019). The PQFP work programme includes an assessment of the potential to integrate forestry better into farming systems by understanding the potential, and the impacts of farm forestry, with a mix of exotic plantations and enhanced native forestry, such as kanuka forests and later successions. Management of wilding pines is another aspect of the land resource to consider. At the same time, emphasis is placed on optimising traditional pastoral farming through access to the latest information and skills of farm management.

The hill and high country pastoral farming area is also recognised for its potential to diversity land uses and employment by creating increased value from the land. This sort of approach recognises that there is unrealised value in the land resources of the programme area(Pawson, et al., 2018). Two key areas of work are therefore:

i) assessing and extending the potential for increased areas of horticulture such as grapes, pip fruit or vegetable production depending on climate, soils and topography, and

ii) assessing and extending the potential for rural tourism in an area that already has important tourist routes through it and proximity to the tourist hubs of Hanmer Springs and Kaikōura.

Impact Assessment

Impact assessment of the programme is strategic in nature and has two main purposes:

i) to evaluate the programme and its activities and the extent to which these activities have created changes in farming systems and rural communities; and

ii) to assess the impacts of the programme in rural areas and communities.

The focus in assessing the impacts of a multifaceted programme such as the PQFP is on an integrated approach in which changes in natural and farming systems are assumed to have a range of physical, biological, economic and social impacts with consequences for people and communities. For instance, planting trees, recovering an area of bush or riparian planting will have ecological effects. There are also likely to be economic and social effects that are all relevant consequences for people and communities (the increased indigenous biodiversity could offer opportunities for honey production or recreational opportunities). The impact assessment is taking place in two phases, and a number of different research methods are used in each phase, while drawing on the technical work, assessments and evaluations of change over all the programme work streams.

The assessment area was scoped using a combination of land-use and demographic mapping to establish a spatial framework for the assessment. The scoping also identified key issues of community change and data requirements to assess them, located data and documents, identified data gaps, and considered scenarios of change with and without the programme.

A phase one report covered the social baseline , building an understanding of the current environment of the programme area, including the existing population and settlements, impacts of the earthquake on the rural community to date, responses and recovery actions taken, how land uses have evolved over time, employment by sector, the visitor sector, and the capacity and resilience of the community.

For the baseline, 2018 was used, with the advantage that this was also the year of the most recent census. With the 2018 baseline, it was also possible to consider the highly disruptive earthquake response and recovery period from late 2016 through to 2018 as integral to the initial conditions of the programme. Assessment of the effects of the programme into the future is focused on longer-term changes - from 2018 on.

Sources of data for the baseline and the assessment of change included census data, business and employment statistics, visitor data, school rolls and other official statistics that built a picture of change. Council reports and data sets were useful sources. In addition, key informant interviews were carried out in the programme area with farmers, members of the Governance Group and agencies involved in programme activities.

Photo credit: Dylan Gillis

The project manager conducted structured interviews with 50 farmers in the PQFP area during the winter of 2018 and subsequent follow up interviews. Short surveys were completed at events as were informal interviews and observations to monitor needs and perceptions of change.

The second phase of assessment is monitoring changes over a two-year period, looking to

i) measure and describe the effects of the programme to date, while

ii) adding information to the baseline.

Projection of changes beyond the baseline is taking place through an examination of scenarios of change (projected changes into the future) and actual impacts identified from activities in the programme. This approach is considering a business as usual scenario (no planned actions), and a programme scenario in which the main components are increased horticultural activity, increased exotic forestry, increased indigenous forestry, increased rural tourism and increased ETS earnings.

Results and discussion

The programme has achieved considerable interest from farmers in the programme activities, including integration of exotic forestry into pastoral farming systems for timber production and/or carbon credits, shifting areas of scrubby land into indigenous forestry to achieve enhanced biodiversity and income from carbon credits, on-farm ecological assessments, opportunities in horticulture, especially in areas with suitable climate and water supplies for irrigation, the control of wilding pines, and the opportunities from rural tourism activities. There is already an enhanced realisation of the diverse opportunities in the rural economy of the assessment area, and of the need to tell that story in a positive way as part of marketing the area's products.

The second phase of the impact assessment is an opportunity to consider how to manage change and maximise these outcomes after the period of funding has ended and project activities are closed. Management of change includes suggestions for ongoing monitoring to understand and manage effects, build community resilience, and maximise social outcomes and wellbeing over time. This focus has to include dealing with any unanticipated consequences for rural households and communities.

Impact Assessment is most effective when it is participatory and we found a community-centred approach is the desired way forward for the programme and its ongoing assessment. This approach requires working with farmers and stakeholders to identify effects at present and into the future. So it is possible to draw on the contributions and discussions with the multi-stakeholder Governance Group, farmers, community members the two district councils (Hurunui and Kaikōura), Destination Kaikōura, ECAN and other stakeholders. In this way the assessment is based on information that is co-produced.

Conclusion

Experience with assessment of the PQFP suggests there are many elements to achieving successful outcomes from projects that support adaptation to climate change and other challenges in rural communities. These include a community centred approach to project management, the on-going assessment of impacts and the evaluation of outcomes, and an adaptive delivery process.

An adaptive approach is essential to developing and managing a programme of change over time, as is keeping a clear focus on project objectives. It has proven important to acknowledge problems or mistakes and actively develop solutions. Ongoing assessment, communication of results and responsive delivery have required active engagement with farmers and stakeholders. The Governance Group made up of community representatives and key stakeholders is essential as a project leader and sponsor. Members of such a group need a clear vision, the necessary capacity and capability, and an ability to connect to their communities of interest. They are also a key element in managing and meeting stakeholder and agency interests.

Farm systems and rural communities are complex. Impacts of one activity will be enhanced by the impacts of others, or worse, will detract from them. Impact assessment is important in developing a new programme and in monitoring and evaluating any programme over time. The PQFP experience confirms impact assessment as a key part of the adaptation-

knowledge cycle (Craddock-Henry, et al., 2019) and of a strategic approach to change in complex, hill country environments.

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