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Exploring Adaptive Governance for Indigenous Peoples: Lessons from Aotearoa New Zealand's Erosion Control Funding Programme

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ABSTRACT

In this article, we trace the evolution of the Erosion Control Funding Programme (ECFP) on the East Coast of Aotearoa New Zealand to illustrate the importance of indigenous co-development of forest systems for more adaptive governance. The ECFP was originally created to address severe erosion on the East Coast, but uptake of the programme has been slower than planned. We employ an adaptive governance lens to track the progress of the ECFP over time, paying particular attention to its implications for Aotearoa New Zealand's indigenous Māori people. We argue that a key aspect of the programme's underperformance relates to the local and indigenous context that remained largely unaccounted for in the ECFP's design and implementation. Our resulting analysis addresses a critical oversight in adaptive governance theory and practice relating to its treatment of power, history, and context, with important lessons for environmental governance in the East Coast and beyond.

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Adaptive governance; Aotearoa New Zealand; East Coast Forestry Project; Erosion Control Funding Programme; forest and natural resources policy; forest management; forestry; indigenous involvement in natural resource management; land

Introduction

In this article, we trace the evolution of the Erosion Control Funding Programme (ECFP) on the East Coast of Aotearoa New Zealand to illustrate the importance of indigenous co-development of forest systems for more adaptive governance. The ECFP was created in 1992 to help address an increasingly severe erosion problem in the East Coast through the auspices of a government-subsidised commercial afforestation scheme. However, uptake of the ECFP has been historically slow, despite an ongoing series of changes to the fund meant to encourage better landowner participation. Recent reviews of the program suggest that levels of afforestation under the ECFP will almost certainly fall well short of the goal of treating 60,000 hectares of the East Coast's worst-eroding land by 2020 (Ministry of Agriculture and Forestry 2011; Scion 2012; Ministry for Primary Industries 2014a).

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Our article tracks the development of the ECFP over time, paying particular attention to its meaning and implications for Aotearoa New Zealand's indigenous Māori people. We argue that a key aspect of the fund's underperformance relates to the local and indigenous context that remained largely unaccounted for in the ECFP's design and implementation. In the analysis that follows, we explore and reflect on some of the ECFP's underlying gaps to note how the progam and others like it working in indigenous contexts worldwide must engage with this context as a primary factor affecting adaptive governance. We subsequently address a critical oversight in the current state of adaptive governance theory and practice, while progressing collective understanding of the complexities associated with environmental management initiatives in Aotearoa New Zealand's East Coast region and beyond.

Adaptive Governance

The field of adaptive governance has emerged in recent decades as a response to the failure of traditional management approaches to achieve supported environmental outcomes (Brunner et al. 2005; Pahl-Wostl 2009). From its origins in the resilience, social-ecological systems (SES), and adaptive management literature, Brunner et al. (2005), Folke et al. (2005), Walker et al. (2004) and others introduce adaptive governance as a non-linear approach to non-linear problems – problems characterized by multiple causes and effects, long-term timeframes, competing perspectives and scales, changing contexts and circumstances, and chronic knowledge and resource gaps. Though the concept is variously defined, adaptive governance approaches share a few key orienting foundations. These most notably include an explicit acknowledgement of the heterogeneous nature of environmental problems, the role of multiple scales and actors, the mediating influence of context, and an ensuing need for flexibility and social learning in the planning and management process (Brunner et al. 2005; Olsson et al. 2007; Armitage, Marschke, and Plummer 2008; Wyborn 2015b; Akamani, Holzmueller, and Groninger 2016). The field thus moves from "management" to "governance", noting the social context and conditions necessary for successful environmental outcomes (Folke et al. 2005; Pahl-Wostl 2009).

In practice, adaptive governance approaches emphasize a robust governance process as the necessary basis for more agile and holistic multi-party decision-making. Strong governance foundations are built around continuing dialog and collective learning, underpinned by mutual trust and joint understanding. Sharma-Wallace, Velarde, and Wreford's (2018) review of the adaptive governance case literature finds that adaptive governance is most effectively empirically achieved through a series of integrated, collaborative tools, which hinge around some or all of the following principles:

- Facilitating community-scale empowerment and engagement, which involves valuing and foregrounding community members' knowledge of their own context, lives, and experiences.
- Brokering collaboration and connections across actors and scales, incorporating a wide range and diversity of stakeholder perspectives and capacities through ongoing opportunities for engagement.

- Building trust and nurturing human relationships, recognizing that base levels of trust, familiarity, and goodwill between partners, typically built up over time, sit at the core of any governance process and outcome.
- Attention to the socio-ecological and governance context, in which governance tools address the real scope and circumstances of the problem.
- Social and physical capacity development, including knowledge and resources, networks and partnerships, and the scope for action.
- Integrating knowledge and decision-making through experiential learning and monitoring progress to capture progress over time and adjust tools and methods for better outcomes.
- Supporting and institutionalizing effective leadership to bring stakeholders together, coordinate governance support, design and implement innovative management ideas, and mobilize communities to act.

Adaptive governance is highlighted here as both a measure and a potential suite of tools for the ECFP and other programs attempting to address complex environmental problems. However, we concur with previous work in the field that highlights the questions of power and equity at the core of (un)successful adaptive governance outcomes (Dare 2013; McDougall et al. 2013; Cooper and Wheeler 2015; Paille et al. 2016). We further contend that while power and equity are central to governance outcomes, they nevertheless remain a relatively understudied component of adaptive governance, at least so far. Fabinyi, Evans, and Foale (2014) observe that the SES and resilience canon from which adaptive governance emerged extends an undifferentiated picture of communities and institutions as well as their basic motives and objectives. The effect, if unintentional, is to disregard the disparate impacts of governance, which are necessarily mediated through the lens of identity, power, and social difference.

Adaptive governance scholarship has similarly tended to concentrate on the design principles and conditions underlying the transition to adaptive governance systems while bypassing "situated" relational perspectives, which are more perceptive to context (Wyborn 2015a, 2015b). The field still requires additional clarity on the role and management of existing equity and power structures, which dictates who wins and who loses in adaptive governance processes (Cote and Nightingale 2012; McDougall et al. 2013; Boyd et al. 2014; Vandergert et al. 2016). Sharma-Wallace, Velarde, and Wreford's (2018) systematic review of the case literature on adaptive governance from 2003 to 2016 finds the same trend in practice. Only a small number of cases in the review emphasized issues of equity and social power as central to adaptive governance outcomes, with others presenting a homogenous description of the groups and communities involved in adaptive governance processes. More work is, therefore, needed to integrate this crucial context into both the theory and practice of adaptive governance.

East Coast Case Study

The erosion problem on Aotearoa New Zealand's East Coast is an apt example of both the need for adaptive governance approaches to address complex environmental issues and the current gaps in adaptive governance theory and practice described above.

Erosion in the region is a long-standing, large-scale, and increasingly urgent environmental phenomenon, which involves dual social and ecological causes and impacts. Any effective solution will likewise demand holistic and flexible tools and methods across a range of partners and stakeholders, including indigenous and non-indigenous landowners, resource users, community and industry groups, and local and central government agencies (Scion 2012; Warmenhoven et al. 2014).

At the same time, the erosion brings to light fundamental factors affecting adaptive governance outcomes relating to power, autonomy, and Aotearoa New Zealand's particular colonial history. The legacy of European colonization in Aotearoa New Zealand continues to affect Māori relationships with their traditional land and resource base as well as their ability and scope for environmental decision-making and governance (Walker 1990; Orange 2012). When placed within the country's wider colonial context, any effort to address the erosion must similarly account for the desire, drive, and right of Māori for tino rangatiratanga or self-determination in relation to land and other governance matters. We suggest that Māori self-determination and relationships with land are key components of adaptive governance in this particular case, but also represent exemplars of the need to account for power, history, and preexisting inequalities in adaptive governance across cases.

Māori living in the East Coast region and across Aotearoa New Zealand share a close cultural connection with the whenua (land). Mana whenua is associated with territorial rights and power conferred to an iwi (tribe) from the land, wherein the land sustains the iwi's history, livelihood, and sense of belonging (Te Runanganui O Ngāti Porou 2014b; Moorfield 2018). An iwi's rohe is the territory over which they exercise kaitiakitanga (guardianship) and the territory over which they exercise their mana whenua (Te Puni Kōkiri n.d.).

Traditional "ownership" is likewise based on an ongoing connection and interdependent relationships with the land: a right based on ties to the whenua. Prior to European settlement in Aotearoa New Zealand, land was held collectively by Māori iwi, hapū (subtribe), and whānau (extended family) groups (see Kawharu 1977; Kingi 2008). Ownership boundaries were fluid and often overlapped between mobile iwi and hāpu, with individual use rights contingent on continuous residence and use, participation in the community, and the maintenance of good relationships within and across tribal and kinship links (Kingi 2008).

Māori relationships with land changed drastically from the 1840 s following European colonization. Anxious to acquire land across the new colony, European settlers conducted a decades-long campaign of Māori land alienation through confiscation and individualization in blatant breach of the Treaty of Waitangi signed in 1840 (see Lyne 1994). In cases where land was not explicitly confiscated, legislation was introduced to classify customary land into title deed under English common law. The intended effect was to reduce transaction costs, making the land easier to buy and sell (Lyne 1994); the consequence for Māori was widespread individualization of land that was previously under collective ownership (Coombes 2003).

Legislation also facilitated the ongoing fragmentation of Māori land ownership. In order to expedite the land codification process, large areas of tribal land were divided into small lots, awarding ownership to more people but fragmenting tribal land title in

the process (Kingi 2008). Fragmentation was accelerated with legislation that entitled each living child to succeed their parent's land, instead of the traditional custom of succession based on land use (Kingi 2008). In a later attempt to "solve" the problem of titled owners selling land without the sanction of customary owners, the Native Land Act of 1873 required that all owners' names be recorded on the certificate of title, helping lead to a situation in which ownership shares are so small they are virtually unusable (Lyne 1994; Tuuta 2013).

In more recent years, the government has attempted to redress Māori land fragmentation through various regulatory tools. The introduction of Te Ture Whenua Māori Act 1993 signaled an explicit acknowledgment of the importance of land retention and use for the benefit of Māori owners. Land incorporations and trusts have also been developed to unite fragmented ownership shares in centralized management bodies. However, governance of multiple-owned land blocks is often costly and cumbersome (Kingi 2008), with incorporations and trusts moreover subject to the approval of the Māori Land Court for even minor changes to land use (Coombes 2003). The previous prevailing Māori land legislation, the 1953 Māori Affairs and Māori Trustee Acts, attempted to address fragmentation by converting land interests which were considered uneconomic to the control of the government's Māori Trustee or a single beneficiary for administration (Lyne 1994; Controller and Auditor-General 2004). The Trustee's official role has shifted alongside Te Ture Whenua Māori Act 1993 to support the retention and development of Māori land and the organization currently manages over 100,000 hectares of land across Aotearoa New Zealand on behalf of almost 100,000 Māori owners (Te Tumu Paeroa n.d.). There is nevertheless lingering distrust among some Māori landowners concerning the Trustee's motives and methods (Controller and Auditor-General 2004). Coombes (2003, 337–338) thus summarizes the history of twentieth-century Māori land policy as one of Eurocentric "paternalism" underwritten by government distrust in the ability of Māori institutions to effectively manage their own land.

We outline the concept of tino rangatiratanga as highly relevant to this context. Tino rangatiratanga is a Māori term translated as absolute sovereignty or full chieftainship, with "rangatiratanga" referring to chieftainship or chiefly powers and "tino" a modifier denoting full, total, or absolute (Tuffin, Praat, and Frewin 2004). The term appears in the Treaty of Waitangi signed in 1840 between European settlers and various Māori iwi, where it has remained the subject of controversy. The te reo Māori (Māori language) version of the treaty conceded only limited government (kāwanatanga) to the British Crown over the land and guaranteed the continued exercise of chieftainship (tino rangatiratanga) over land, villages, and taonga (treasures) by Māori leaders. By contrast, the English version awarded absolute sovereignty to the Crown while promising Māori "possession" over their land and resources (Orange 1987; Treaty of Waitangi 1840). Though precise understandings of tino rangatiratanga differ across iwi in the country, in this context, the concept has been interpreted as unequivocal Māori sovereignty and control over institutions, systems, and ways of being and knowing (Orange 1987; Tuffin, Praat, and Frewin 2004). It has also been interpreted as self-determination (Smith 1997) and full Māori control over things Māori (Durie 1995).

Two important elements of tino rangatiratanga are mana whenua and mana tangata. Mana whenua relates to the authority and rights of iwi and hapū to determine their own affairs in relation to tribal territory; mana tangata recognizes the right of Māori to organize as they see fit, along social, cultural, and political groupings through the privileges that whakapapa (genealogy or lineage) confers (Durie 1995). At present, most policies for and affecting Māori are determined by the Crown, but mana tangata indicates that Māori hold the right to speak and act for themselves to determine their own policies and destiny (Durie 1995).

In the following sections of the article, we present a comprehensive analysis of the ECFP with a particular emphasis on the program's relevance and implications for Māori living in Aotearoa New Zealand's East Coast. We explain the background to the ECFP first, noting the long history of erosion on the East Coast. Next, we outline our research methodology, including a review of the gray literature and 78 semi-structured interviews. In the remainder of the article, we consider the extent to which the ECFP observed and practised adaptive governance in the East Coast. While we acknowledge the program's ongoing evolution, we highlight factors specific to Māori relationships with colonization, autonomy, and land in the region that we suggest are not only contributing but integral determinants of the fund's slow rate of uptake. We conclude by discussing the implications for adaptive governance in the East Coast case and beyond.

Methodology

Study Context

The East Coast region is located along the northeastern corner of Aotearoa New Zealand's central North Island (see Figure S1). The region sits in relative isolation, bordered by rugged country to the south, the Raukūmara and Huiarau mountain ranges to the west, and the Pacific Ocean to the east (Soutar 2018). Residents identifying as Māori make up 48.9% of the population in the East Coast, the highest proportion of Māori in any region in Aotearoa New Zealand (Statistics New Zealand 2013). The Ngāti Porou iwi (tribe) represents the largest Māori population in the region and the second-largest tribal affiliation in Aotearoa New Zealand, though most members live outside the East Coast (Reedy 2017). While the ECFP affects other iwi and non-Māori landowners across the East Coast, we concentrate on the role and implications of the program to Ngāti Porou due to their role in the development of the ECFP and the iwi's extensive landholdings within the region (Office of the Parliamentary Commissioner for the Environment 1994; Cocklin and Wall 1997).[1]

Aotearoa New Zealand is naturally prone to high erosion rates at a national level due to a combination of physical geography, wet, high-intensity weather patterns, and extensive deforestation (Basher 2013; Fernandez 2017). However, the East Coast is particularly affected by erosion, constituting not only one of the most erosion-prone areas in the country but also one of the most erosion-prone areas in the world (Phillips et al. 2013). The region accounts for only 7.8% of the North Island's land area but contains 26% of the island's severely-eroding land (Gisborne District Council 2014).

The erosion is attributable to the East Coast's unstable geology, steep terrain, and high-frequency high-severity storm events. The naturally unstable mudstone and

argillite rocks that predominate the region have been further weakened by extensive tectonic activity, a high incidence of major storms and heavy regional rainfall patterns – approximately 2500 millimeters per year in the high inland country (Phillips et al. 2013). However, the erosion was considerably accelerated and exacerbated by the widespread deforestation of land for pastoral farming (Marden et al. 2012; Phillips et al. 2013). Following a period of vegetation clearance by the first Māori inhabitants in the region, early European settlers intensified deforestation efforts, clearing all but the highest and roughest hill country from their arrival in the mid-19th century (Harmsworth and Raynor 2005; Rosser, Page, and Peacock 2012; Phillips et al. 2013). Geologists began warning of erosion in the East Coast as early as the 1920s, followed by a growing occurrence of large floods and regional landslides (Phillips and Marden 2005). The erosion problem was thrown into sharp relief when Cyclone Bola hit the region in 1988 to devastating effect (Gundry 2013; Ministry for Culture and Heritage 2016).

Early efforts at erosion control in the East Coast focused on reforestation, including extensive plantings by the New Zealand Forest Service until its disestablishment in 1987. In the wake of Cyclone Bola in 1988, the Ministry of Agriculture and Forestry (MAF) implemented the East Coast Conservation Forestry Scheme in two southern catchments to help address the erosion by planting trees.[2] The scheme was replaced by the region-wide East Coast Forestry Project (ECFP) in 1992; the ECFP was renamed the Erosion Control Funding Progamme in 2014 and continues in a modified form to this day. The program provides grants to East Coast landowners to reduce erosion through tree planting, native reversion, and erosion-focused community projects (Ministry for Primary Industries 2017b).[3] So far, the ECFP is falling short of its stated afforestation goals, with a total of 41,906 hectares of land treated for erosion as of 2018 (Ministry for Primary Industries 2018b). In 2014, the Ministry for Primary Industries (MPI) (2014a) noted that only 27,000 hectares of the total treated land fell under the ECFP's target of 60,000 hectares of the East Coast's worst-eroding land by the time the program ends in 2020 (Bayfield and Meister 2005; Ministry of Agriculture and Forestry 2011).[4] As of the same year, approximately 29,000 hectares of the program's target land remained untreated (Ministry for Primary Industries 2014a).

We highlight the case of the Waiapu River catchment as an illustrative example of the implications of both the erosion problem and the ECFP for Ngāti Porou living in the East Coast. The Waiapu catchment is a large catchment located in the northern part of the region, encompassing the Mata and Tapuaeroa Rivers which converge to form the Waiapu River (see Figure S1). The catchment boasts a majority (approximately 85%) Māori population (Statistics New Zealand 2014), while the Waiapu River itself makes up an important part of Ngāti Porou's rohe (territory). Though MPI (2014a) notes that Māori landowners are a key target of the ECFP – particularly in the Waiapu catchment, the site of some of the worst erosion-prone land in the East Coast – Māori uptake of the fund has and continues to remain slow (Bayfield and Meister 2005; Scion 2012; Ministry for Primary Industries 2017a, 120). As of 2014, 44% of the ECFP's remaining high-priority land in the East Coast was located in the catchment (Ministry for Primary Industries 2014a).

Scion (2012) and Warmenhoven et al. (2014) note that the biophysical erosion in the Waiapu catchment is inseparable from the erosion of Ngāti Porou's livelihoods base

and the iwi's cultural, spiritual, and social values. Ngāti Porou's culture, values, identity, and language have been shaped over generations by the environment they live in, summarized by their identifying proverb, "Ko Hikurangi te maunga, Ko Waiapu te awa, Ko Ngāti Porou te iwi" (Hikurangi is the mountain, Waiapu is the river, Ngāti Porou is the tribe) (Te Runanganui O Ngāti Porou 2014a). The iwi outline their important role as kaitiaki (guardian) through which they have a cultural imperative to protect and nurture the environment, and in return, the environment will protect and nurture them (Te Runanganui O Ngāti Porou 2014a). A Waiapu community member explains:

> [The earth] is a living entity, as everything is life, whether it be plant life, or human life, or mother earth. When you look back in our stories and histories, the earth has always been our mother and nourishes us. That's because we are part of one and the same in our creator. (Quoted in Harmsworth, Warmenhoven, and Page 2002, 28)

The degradation of the Waiapu River and its surrounding landscape through erosion has separated and displaced families and communities and contributed to socio-economic deprivation and a high rate of rural depopulation. The erosion has also impaired local food and resource livelihoods, while weakening cultural knowledge and practices by damaging the vital and holistic relationships between people and the land (Barnard et al. 2012; Warmenhoven et al. 2014).

In 2013, the central government, represented by MPI, signed a 100-year Memorandum of Understanding (MoU) with the East Coast's regional administrative body Gisborne District Council (GDC) and Ngāti Porou's governance entity Te Runanganui O Ngāti Porou (TRONPnui) to restore the Waiapu catchment to "healthy land, healthy rivers, healthy people" (Ministry for Primary Industries, Te Runanganui O Ngāti Porou, and Gisborne District Council 2014). Though the ECFP is set to expire in 2020, the fund was intended as a key implementation tool for the early years of the Waiapu restoration program, making the Waiapu catchment an opportune geographical and methodological test case of Ngāti Porou's past and current relationship with the ECFP.

Literature Review

In order to trace the ECFP's shifts over time, we conducted an extensive review of the gray literature, supplemented by Cocklin and Wall (1997) and Phillips et al.'s (2013) secondary analyses of specific aspects of the program. We began by performing Google Web and Google Scholar searches using the search terms "East Coast Forestry Project" and "Erosion Control Funding Programme". Given the low number of search results returned, we reviewed and analyzed each result in detail, specifically looking for information on notable events over the lifetime of the ECFP. Search results included government documents, news media, and stakeholder submissions to program reviews and yielded data on the ECFP's development, reviews and feedback on the program, formal changes to the ECFP, and program outcomes from 1992 to the present. Based on the findings of the literature review, we developed a detailed chronological timeline mapping the content and relationships between official reviews, program outcomes, program changes, and the program context to reflect on and assess the ECFP's evolution from its

inception to its current form. We subsequently charted this evolution onto the adaptive governance principles described in the introduction.

Interview Process

We also draw on a series of semi-structured interviews conducted in 2016 as part of a complementary action research project on adaptive governance for enhanced environmental decision-making in the Waiapu catchment (Edwards et al. 2018). Working with the three MoU partners, the project aims to promote the use of adaptive governance tools for more holistic multi-party problem-solving across the erosion and other issues facing the catchment. Interviews were conducted with 78 individuals responsible for one or more aspects of land-use management and decision-making in the catchment in order to probe stakeholders' views on the barriers and opportunities to restoring the catchment to the MoU aspirations of "healthy land, healthy rivers, healthy people" (Ministry for Primary Industries, Te Runanganui O Ngāti Porou, and Gisborne District Council 2014). Participants included 26 Waiapu community members who were selected by the project's Ngāti Porou researchers for the hapū (kinship group or subtribe) and geographic areas they represented. The researchers tried to spread representation across the catchment. Interviews were also completed with 52 non-hapū representatives spanning pākehā (European New Zealander) landowners, resource managers, local and central government agencies, community organizations, industry groups, and education providers, targeted based on their land-management activity and decision-making capacity within the catchment. We refer to both the hapū and non-hapū interview data in the present analysis in order to capture the wider context of the ECFP, incorporating the perspectives of both past, current, and potential future ECFP grantees and the agencies and officials responsible for facilitating, implementing, and monitoring the program.

Interview questions explored the relationships, information, and resources utilized by participants in the restoration of the Waiapu catchment. The interviews also examined participants' views of the key issues impeding restoration, including their perceptions of the current and desired state of support for restoration activities. Adaptive governance themes addressed in the interviews related to collaboration, relationships and networks, resources and capacity-building, and the context for restoration actions and outcomes. The interviews were transcribed and thematically coded using the NVivo 11 software system for processing and analyzing qualitative research.

Since the interviews were not focused exclusively on the ECFP, we acknowledge that the resulting data may not capture the full range of interviewees' opinions on and experiences with the program. The ECFP was nevertheless mentioned several times by numerous interview subjects as a key policy and funding resource in the context of the Waiapu restoration project, and placed unprompted within the catchment's broader actor, issue, and policy landscape. The interview subjects' candid assessments of the ECFP from a range of different perspectives and scales add a necessary human dimension to the ECFP narrative constructed from the gray literature, particularly concerning the program's gaps and blind spots.

Results and Discussion

The ECFP has undergone a number of substantial changes since its inception, both in content and in scope. In this section, we outline the major adjustments made to the fund over time following a series of official reviews. We simultaneously analyze the extent to which the ECFP practised adaptive governance, highlighting what we argue are some critical factors contributing to the slow rate of uptake of the program so far – specific to the context of Ngāti Porou and the East Coast but relevant to environmental governance issues everywhere.[5]

The ECFP began as the East Coast Forestry Project in 1992. Following decades of large-scale erosion in the East Coast, Aotearoa New Zealand's central government was eager to fulfill a 1990 election promise to combat erosion through tree planting and forest retention (Office of the Parliamentary Commissioner for the Environment 1994). The East Coast Forestry Taskforce was created by the government in 1991 to investigate opportunities to increase planting in the region. The taskforce included representation from government, industry, and Ngāti Porou, who had recently began to explore commercial forestry as a viable option for tribal and economic development (Cocklin and Wall 1997).

The ECFP's initial iterations were developed around a multi-fold objective, specifically "to promote contiguous commercial forestry as a means of controlling soil erosion, providing employment and regional development and recognis[ing] environmental needs on individual properties" (Ministry of Forestry 1992, 2). This was to be achieved through a tendered grant scheme under which landowners applied for funds to partially reimburse the cost of forest planting. The goal was to plant 7000 hectares of land per year until 2020 for a total planted area of 200,000 hectares, with the majority of the plantings targeted at the exotic, commercially-focused radiata pine species (Ministry of Forestry 1993).[6] The ECFP was originally open to any East Coast landowner or person or entity holding an interest in land in the region, provided their land met the program's eligibility requirements. In 2017, MPI opened a program funding stream for community groups, iwi, local organizations, and businesses to support erosion-focused projects at the property, community, or regional level (Ministry for Primary Industries 2018c).

We now turn to consider the extent to which the ECFP achieved adaptive governance through its 27 years of operation through a qualitative comparison of the program's design, implementation, and revisions with the seven adaptive governance principles outlined in the introduction. Specifically, we note that the indigenous (Ngāti Porou) context in which the ECFP was implemented – though acknowledged – was often unaccounted for throughout the program's tenure. Recognizing the iterative, overlapping nature of adaptive governance tools and methods, the principles are organized below solely for the purposes of a coherent narrative; our ordering is not meant to represent the relative importance of each of the principles, nor to suggest that one is possible without the others.

Facilitating Community-Scale Empowerment and Engagement

An essential component of adaptive governance concerns the extent to which the affected community or communities are involved in and benefit from specific

governance processes and outcomes (McDougall et al. 2013; Cooper and Wheeler 2015). Prior to and during the ECFP's initial development phases, Ngāti Porou was hopeful that the program would offer a path toward tribal revitalization and self-determination through iwi-driven commercial forestry projects (Office of the Parliamentary Commissioner for the Environment 1994). Ngāti Porou asserted mana whenua over their territory in the East Coast region, but a colonial legacy of land alienation and deprivation continued to impact their close identity with, and maintenance of, the land (Scion 2012). In light of this context, Ngāti Porou believed that participation in the ECFP would support a desperately-needed "socioeconomic base which will allow [Ngāti Porou] to do things for [themselves]" using their own land and resources and without over-reliance on government assistance (Kapua quoted in Cocklin and Wall 1997, 155). At stake for Ngāti Porou were not only gains in employment and erosion control but also the iwi's linked cultural, economic, and environmental survival, manifested through their relationship and livelihood from the land (Cocklin and Wall 1997; Ngāti Porou quoted in Office of the Parliamentary Commissioner for the Environment 1994, 19).

In order for the ECFP to help Ngāti Porou achieve their goals, the iwi considered it an essential precondition that they help set the terms of governance for the program (Cocklin and Wall 1997). Their expectation was that they retain control of both their land and their forestry operations, that the economic benefits to their people outweigh the costs, and that ECFP guidelines account for the iwi's previous deprivation as well as their unique barriers to participation in the program (Ngāti Porou quoted in Office of the Parliamentary Commissioner for the Environment 1994, 19–20). Ngāti Porou Whanui Forests (NPWF) was quickly created as a limited liability company to assist and coordinate applications for Ngāti Porou forestry projects under the ECFP, with Aotearoa New Zealand forestry company Tasman Forestry Ltd. secured as a joint venture partner to address Ngāti Porou's need for capital (Cocklin and Wall 1997).

Cocklin and Wall (1997) and the Office of the Parliamentary Commissioner for the Environment (1994), nevertheless, outline the obstacles to Ngāti Porou self-determination through the ECFP within the very first year of the program. Clearance of scrubland was originally authorized under ECFP guidelines provided it was not intermixed with developing indigenous tree species (Ministry of Forestry 1992). However, soon after the program was announced in 1992, environmental groups began to lobby against the scrub clearance guidelines based on their conflict with the New Zealand Forest Accord, signed in 1991 by conservation organizations and representatives of Aotearoa New Zealand's forest industry. The Accord outlined the dual importance of native and plantation forests and established limits on the clearance of indigenous vegetation signatories were permitted to undertake. Environmental groups argued the guidelines in the ECFP contravened those limits, with signatories' participation in the ECFP violating the Accord's conditions (Office of the Parliamentary Commissioner for the Environment 1994). Following several months of negotiations, the government amended the ECFP to provide more protection for indigenous vegetation, but environmental groups remained unsatisfied, and Tasman Forestry Ltd. eventually withdrew from its joint venture partnership with NPWF on account of the company's commitment to the Accord. The amendments to the ECFP themselves were of particular significance to Ngāti Porou,

given the high proportion of scrubland under their members' ownership; based on the private (non-governmental) nature of the Accord, Cocklin and Wall (1997) question the government's decision to mediate the conflict between the agreement and the ECFP in the form of amendments to the scrub clearance allowance. In any case, Tasman Forestry Ltd.'s withdrawal from the NPWF joint venture directly and negatively impacted Ngāti Porou's ability to fully participate in the first years of the ECFP, under revised guidelines that the iwi moreover viewed as unfavorable to their objectives (Cocklin and Wall 1997).

Brokering Collaboration and Connections across Actors and Scales

Networking, engagement, and the flow of information between actors working at multiple levels ensures a continuing basis for adaptive governance activities across the various scales of an environmental problem (Brunner et al. 2005; Ernstson et al. 2010). Collaboration between Ngāti Porou and local and central government agencies has nevertheless been difficult over the ECFP's tenure. Four years after Tasman Forestry Ltd. withdrew from the joint venture with Ngāti Porou, NPWF found a new partner in the Korean company Hansol Forem, headquartered internationally and thus unconstrained by the terms in the Forest Accord (Miller, Dickinson, and Reid 2005). An iwi representative framed the new agreement as a reiteration of Ngāti Porou's mana (authority or prestige) after being "dictated to" by the environmental groups involved in the New Zealand Forest Accord (Mahuika quoted in Cocklin and Wall 1997, 158). But irrespective of the new partnership, we found that the controversy surrounding the Accord is indicative of a more general trend in which Ngāti Porou felt excluded from important decisions concerning the design, implementation, and governance of the ECFP. An interviewee involved in previous work around the ECFP explains:

> … [F]undamentally, the ECFP was created through an agreement between Ngāti Porou and the Crown. It was not intended for everybody else, but it has morphed into something different. ECFP, in its current state, is not achieving what it should. Ideally, we sit with them and co-create what it would be looking like. My challenge has always been, with working with ministries, is that they're in Wellington [Aotearoa New Zealand's capital]. They don't actually understand how it works. They do have people on the ground, but it's the people in the ministries that decide how the money is distributed - not the people on the ground. (Hapū interviewee, 2016)

A base lack of advocacy and information-sharing concerning the ECFP's objectives, criteria, and application process has similarly led to ongoing frustration for Ngāti Porou and other potential grantees. One interviewee reports: "Even now, it is not like they turned around and said, 'Hey landowners, this is what's going on. This is the matter. Here is the funding. Here is the application form. This is what you need to do'" (hapū interviewee, 2016). Another interviewee concurs:

> I think that there has been a lot of the confusion of the actual grant scheme itself. No one has really been clear on what it looks like and what it would achieve. They will say it is erosion control when in actual fact that does not mean anything for whānau. (Hapū interviewee, 2016)

ECFP administrators have recognized this gap, hiring a Ngāti Porou relationship coordinator in 2014 to increase Māori enrollment in the program. MPI (2017a) notes some success resulting from the change and recently outlined plans to recruit additional personnel (Ministry for Primary Industries 2018b), though interviewees note that a large area of Ngāti Porou land still requires treatment. A larger related issue involves barriers to engagement *within* multiple-owned Māori land blocks. Decision-making within land trusts and incorporations is notoriously challenging due to the number and geographical spread of interested owners, as expressed by two hapū interviewees:

> Yeah, because in the roundabout way, I'm the tenant of 6,000 landlords. How do I tell 6,000 landlords? (Hapū interviewee, 2016)

> I look at some of my other blocks and I think you have got 50 whānau scattered across the country, "Oh, we need to do this thing for erosion control." … That is just a little part of it and I think the intricacies of why and how. Compliance and regulation? Absentee landowners are going, "Who cares? What are you going to do to me if we don't?" (Hapū interviewee, 2016)

Decision-making within multiple-owned land blocks that are governed by a trust or incorporation is difficult enough, but many Māori-owned land blocks in the East Coast lack even this mode of governance – critically, an essential pre-requisite for participation in the ECFP, which is simultaneously an "inherited" obstacle to participation for distrustful landowners (hapū interviewee, 2016). The problem is complicated further with the recognition that a holistic approach to erosion control will involve the coordination of efforts across several multiple-owned landblocks at a time (non-hapū interviewee, 2016). Though not a direct result of the ECFP, the current context for Māori land governance subsequently demands that the program more effectively account for the complexities associated with decision-making on multiple-owned land.

Building Trust and Nurturing Human Relationships

Trust, social capital, and the development of human relationships underlie successful adaptive governance initiatives, providing a strong foundation for enduring partnerships in the midst of change and uncertainty (Chapin et al. 2012). We found that Ngāti Porou's dissatisfaction with the ECFP is mediated by high levels of real or perceived distrust in the East Coast region, both by the central and regional governments in the ability of Ngāti Porou ability to effectively manage their land and by Ngāti Porou in the process, motivations, and impacts of government policy and decision-making. One interviewee remembers telling ECFP administrators, "Well, our people have been treated badly since [the programme's] inception," while another recounts:

> So, to be blunt, one of the comments I got from someone up there [in the Waiapu catchment] was – this is someone from Ngāti Porou – saying, "The Māori have been shafted by the government on so many different levels that they just really, if someone comes to them and says I've got a deal for you and here's the money to do so," they think that's – a distrust. (Non-hapū interviewee, 2016)

Attempts at erosion mitigation that are managed outside of Ngāti Porou's control exacerbate frustrations regarding a lack of influence over the decision-making process

(Porou et al. 2012). Porou et al. (2012) suggest that such interventions are seen by Ngāti Porou as short-term solutions, when problems affecting Ngāti Porou require Ngāti Porou's full authority. In the meantime, according to an interviewee, "[Trust] is a key issue. They don't trust us [Ngāti Porou] to be able to do what we've said we'd do" (hapū interviewee, 2016).

Following Bayfield and Meister's (2005) review of the ECFP, funding was made available for more one-to-one program advocacy and education, including personnel resources for engaging Māori land blocks (Ministry for Primary Industries 2017a). However, more support may be needed to address a deeper suspicion among some landowners of the government's fundamental motivations for Māori land in the East Coast. An interviewee explains:

> To me, I look at MBIE [Ministry of Business, Innovation and Employment] and MPI and everyone is all about how do we generate and utilize unproductive Māori land? Well, the reality is it is not your Māori land to have a say over or have a care for. What we need from places like that is support in terms of resourcing, not only financial but the science stuff as well. (Hapū interviewee, 2016)

Interviewees express similar cynicism concerning the role of the Māori Trustee, which manages a large proportion of Ngāti Porou land in the region. Several hapū members complain that the Trustee's perceived focus on economic rather than environmental or land development goals significantly hinders their participation in the ECFP. Instead, one suggests, "what it really comes down to is that the rūnanga [tribal governance council] takes over the management of the Māori Trustee's blocks entirely. You establish an organisation to do that … We should be about land development for our people" (hapū interviewee, 2016).

Attention to the Social-Ecological and Governance Context

Adaptive governance approaches recognize the influence of context on both the origins and impacts of an environmental problem and the effectiveness of the methods and tools involved in any solution (Ratner et al. 2013; Wyborn 2015b). Our research suggests that in the East Coast case, the prevailing colonial context relating to land – both ownership of and relationships with – plays a central role in the slow Māori uptake of the ECFP. Alongside the issues with incorporating multiple-owned land into the ECFP described above, the 2005 introduction of a 50-year covenant requirement for ECFP-treated land created significant problems for Māori land blocks. The covenant requirement stipulated that forest cover be maintained for 50 years on ECFP-treated land, regardless of who owned the land. The rule was introduced to address previous instances of deforestation on ECFP-treated land blocks. However, a relatively large proportion of Ngāti Porou land is under the administration of the Māori Trustee; with Māori landowners and the Māori Trustee often hesitant to enter long-term agreements that will bind or constrain future generations, the covenant requirement presented a significant barrier to full participation in the ECFP (Ministry of Agriculture and Forestry 2011). The covenant requirement was eventually removed in 2014 – nine years after its implementation – following a program review (Ministry for Primary Industries 2014a).

Our interview data indicates that the ECFP also arguably bypasses the holistic nature of both Ngāti Porou's relationship with their land and the causes and impacts of the East Coast erosion problem. For Ngāti Porou, the tangata whenua (people of the land), people and land are intimately connected, as expressed by several hapū interviewees:

> Ki ahau nei mena ka hono te whānau ki te whenua ka puawai te whenua ka puawai te whānau (to me, if the whānau has a relationship to the land, the land will – bloom – progress and so will the whānau). (Hapū interviewee, 2016)

> … [T]hat's what the restoration is in the larger sense. It's not the restoration just of the physical landscape. It's actually of our people, of our knowledge, and our way of doing things. (Hapū interviewee, 2016)

> So if you look at it at quite high level and talk about restoration, the practices that we live by every day are restorative. So whether it's connecting with our children, with our whānau's children, children from the community, whether it's preserving water, whether it's teaching our kids not to throw rubbish on the ground … (Hapū interviewee, 2016)

Erosion of the land is likewise connected to the erosion of Ngāti Porou's relationship with the land and encapsulates dimensions including culture, governance, environment, economics, health, and the history of Māori/pākehā relations on the East Coast (Porou et al. 2012). Erosion cannot therefore be sufficiently addressed with solely "erosion"-focused solutions when the erosion is reflective of deeper problems in the region:

> The issue is mana motuhake [autonomy, authority through self-determination] is not erosion. We need a holistic view to change, not just talking about the symptoms like erosion. 'Cause when you say erosion all we can talk about is erosion … We need to talk about the big picture. (Pohatu quoted in Porou et al. 2012, 226)

By many accounts, the ECFP has failed to incorporate the multiple elements of erosion in its objectives and guidelines. Contrary to the Office of the Parliamentary Commissioner for the Environment's early (1994) call for an integrated approach to erosion control, changes to the ECFP over time have focused largely on the technical aspects of erosion control, including afforestation methods and species, program funding mechanisms, and land targeting and classification. Bayfield and Meister's (2005) review of the ECFP similarly acknowledged the special constraints to Māori participation posed by the exclusion of scrubland but concluded that the guidelines were conducive to the program's overall objective of erosion control on the East Coast's most vulnerable land. Porou et al. (2012) compare the lack of clear social, economic, and cultural objectives in the ECFP with the number and scope of indicators developed by Ngāti Porou for restoration of the Waiapu catchment, which include a strong identity (whakapapa), Ngāti Poroutanga (the Ngāti Porou culture or way of doing things), employment and wealth creation, te reo and tikanga (the Māori language and way of doing things), whānau, mana motuhake, connectedness, matauranga (Māori knowledge and knowledge systems), a clean environment, and infrastructure. Porou et al. (2012) signal the mismatch between the ECFP's biophysical erosion-focused goals and Ngāti Porou's broader relationships and aspirations for the catchment as one of several potential reasons for the low uptake of the program by Ngāti Porou. While the most recent revisions to the ECFP open up scope for community-focused projects across the erosion and forestry value chain (Ministry for Primary

Industries 2017b), it remains to be seen how these changes will impact either program uptake or erosion control during the fund's last years.

Social and Physical Capacity Development

Environmental governance efforts will invariably falter without access to an appropriate range of knowledge, networks, money, and infrastructure (Maclean et al. 2013). While ECFP landowner grants provide monetary support for erosion control on marginal and/or unproductive land, the program originally funded grantees retroactively, following confirmation that plantings had been established. This presented a particular problem for many Ngāti Porou due to a high rate of socio-economic deprivation, especially in the Waiapu catchment area, as well as the challenges associated with obtaining finance for multiple-owned land. The result was a fundamental constraint to Ngāti Porou landowners' capacity to participate in the program even after a joint venture partner for NPWF was secured in 1996:

> The bigger challenge, particularly in my experience with the Māori blocks, is that we have never been able to have the capital expenditure that was required initially 10 years ago. You had to pay for everything and just hope and pray that they survived so you would get back the money. It was all retrospective. For want of better words, that only worked for the really big rich farms that were never supposed to be why the fund was set up in the first place … (Hapū interviewee, 2016)

> The only tricky thing was, a lot of this stuff is on Māori leasehold land and the trusts have got about $1.80 in the bank … [But] I've got to carry the cost of [treating land] upfront. (Hapū interviewee, 2016)

Concerns around funding have been recognized and to some extent addressed, by recent revisions to the ECFP – specifically through the provision of bridging finance and earlier grant payments (Olsen 2014; Ministry for Primary Industries 2016; New Zealand National Party 2017). However, even while Ngāti Porou's lack of capital was acknowledged as a barrier from the fund's outset (see Office of the Parliamentary Commissioner for the Environment 1994), the revisions came with only six years left in the ECFP's tenure. An interviewee thus queries the support available for erosion control in the East Coast after the ECFP ends in 2020:

> We have got the East Coast Forestry Programme. We need to know what is beyond that. We need to have the Crown say, "Right, we are going to roll over the East Coast Forestry Programme for another 10 years and we are actually going to open up the money so that it is more accessible. We are going to actually put money into helping landowners to do it for themselves." (Hapū interviewee, 2016)

Beyond monetary resources, several interviewees critique the education and advocacy work historically associated with ECFP grants. One explains: "That's what's happened in the past with the [ECFP] – is that there's no thought of season or planting times so they have failures." To counter the effects of low- or ill-informed landowner knowledge, another interviewee suggests:

> So I think what's important when you get a grant is to ensure that as landowners, when they're giving you the grant, they're wrapping as much support as they can around you, as in education and advice of when to plant, how to plant, etc. (Hapū interviewee, 2016)

Integrating Knowledge *and* Decision-Making *through Experiential Learning and Monitoring Progress*

Regular, consistent monitoring of governance outcomes allows stakeholders to assess progress and change their tools, methods, and approach when necessary (Coe-Juell 2005). Prior to and during the design and implementation of the ECFP, the government consulted interested parties, including local and central government departments, industry groups, communities, and Ngāti Porou (Office of the Parliamentary Commissioner for the Environment 1994). The ECFP was also reviewed consistently over the program's tenure (Office of the Parliamentary Commissioner for the Environment 1994; 1998, 2000, and 2016 reviews; Bayfield and Meister 2005; Ministry of Agriculture and Forestry 2011), with reviews often followed by revisions to the program (e.g. revisions in 2000 following the 1998 review; revisions in 2006 following Bayfield and Meister's (2005) review; revisions in 2014 following MAF's (2011) review; and revisions in 2016 and 2017 following the 2016 review).

This series of iterative reviews of the ECFP indicated areas where improvement was required for both increased uptake and community and grantee acceptance of the fund, accounting for both barriers to wider stakeholder adoption and the regional context for forestry. Where the program may be most lacking in this regard is the speed at which administrators addressed the issues that were flagged during early and more recent reviews; for example, the funding and capital constraints highlighted by the Parliamentary Commissioner for the Environment as early as 1994 (Office of the Parliamentary Commissioner for the Environment 1994) were not amended until the 2014 revisions.

Other barriers to participation were not dealt with at all. The Parliamentary Commissioner for the Environment (1994), Bayfield and Meister (2005), and MAF's (2011) reviews each acknowledged the special difficulties for Māori access to the ECFP due to the exclusion of indigenous scrub-covered land from program eligibility. The high proportion of scrubland under Ngāti Porou ownership resulted not only in Tasman Forestry Ltd.'s withdrawal from the joint venture partnership with NPWF, but of the outright exclusion of much of Ngāti Porou's land from the ECFP in the first place (Cocklin and Wall 1997). Despite the effects of the rule for Ngāti Porou, however, Bayfield and Meister (2005) explicitly reiterated their support for the scrub exclusion in their 2005 review as complementing the ECFP's core erosion control objectives.

Supporting and Institutionalising Effective Leadership

Strong and competent leadership is an important element of adaptive governance, particularly when the available science and/or knowledge, however sound, is insufficient to inspire behavioral change (Steelman and Tucker 2005; Basurto and Jiménez-Pérez 2013). We, nevertheless, failed to find any sustained evidence for leadership development to complement the design and implementation of the ECFP.

Conclusions

The ECFP is not, and should not be, the only available support for erosion control in the Waiapu catchment or in the East Coast region more broadly. The Waiapu

catchment restoration program, formalized in a working partnership between MPI, GDC, and TRONPnui, explicitly recognizes the interconnection of land and people in its 100-year goal of "healthy land, healthy rivers, healthy people" while noting the need for holistic solutions to a multi-faceted problem (Ministry for Primary Industries, Te Runanganui O Ngāti Porou, and Gisborne District Council 2014). Nevertheless, given that the Waiapu restoration program relies on the ECFP as a key funding and implementation tool (Ministry for Primary Industries 2014b), it is essential that the ECFP promotes an integrated approach to erosion control, which moreover accounts for the social, ecological, cultural, and political context of the East Coast region.

We employed an adaptive governance lens as one way to track the progress of the ECFP over time, based on seven principles for good practice derived from empirical cases (Sharma-Wallace, Velarde, and Wreford 2018). Indeed, an adaptive governance approach can provide guidelines or tools for more holistic, just, and supported environmental governance in the future. However, we also note the recent literature in the field which outlines the centrality of power and history for adaptive governance outcomes, where preexisting inequalities constitute the context and foundations from which governance must necessarily emerge (Dare 2013; McDougall et al. 2013; Cooper and Wheeler 2015; Paille et al. 2016). This centrality is juxtaposed with the simultaneous failure of many theoretical and empirical adaptive governance approaches to systematically engage with questions of power, autonomy, identity, and difference, if at all (Cote and Nightingale 2012; McDougall et al. 2013; Boyd et al. 2014; Fabinyi, Evans, and Foale 2014; Wyborn 2015b; Vandergert et al. 2016).

As evidence of the pressing need for adaptive governance to more thoroughly integrate these concepts, we point to the case of erosion on Aotearoa's New Zealand's East Coast, where issues relating to tribal autonomy and Ngāti Porou's history with land and land ownership are, in fact, critical to the success of the ECFP and adaptive governance in the region more generally. The prevailing land ownership and governance context under which the ECFP operates is mediated by the enduring legacy of European colonization in Aotearoa New Zealand and the East Coast, including its affront to mana whenua and mana tangata rights, its impact on the capacity and scope of Māori to participate in environmental decision-making, and the ongoing desire for indigenous self-determination. Our article's most important contribution is its illustration of the sheer extent to which this context is imbricated in adaptive governance. This is true for both the indigenous case we analyzed here and others. Issues relating to tino rangatiratanga (self-determination) and Ngāti Porou's connections with land and land ownership can ostensibly be included and broadly addressed by several of the adaptive governance principles we outlined above; in this case, however, they were not perceived as integral to the ECFP's overall design and implementation. Particularly in indigenous contexts, which are impacted by legacies of colonization and a history of cultural and land alienation, we argue that these questions are, in fact, central to adaptive governance, underpinning everything that follows.

Our analysis thus provides comprehensive evidence and support for an emerging and urgently needed area of adaptive governance research—namely, the role of power, equity, and history for successful adaptive governance processes and outcomes. Adaptive governance approaches need not only account for these factors, but must at

least account for them in the first place, as illustrated by the case of Aotearoa New Zealand's ECFP. We close by reiterating the call by Fabinyi et al. (2014), Karpouzoglou, Dewulf, and Clark (2016), and Sharma-Wallace, Velarde and Wreford (2018) for future research to engage more explicitly with these critical dimensions of adaptive governance, both in theory and in practice.

Notes

1. Ngāti Porou own more than half of the 275,823 hectares of Māori-owned land in the East Coast (Office of the Parliamentary Commissioner for the Environment 1994; Cocklin and Wall 1997; Ministry of Business, Innovation & Employment 2013). For a summary of the impacts of European colonization on the iwi's historical land base, see the 2010 Treaty settlement deed (Ngāti Porou, Te Runanganui O Ngāti Porou Trustee Limited, and The Crown 2010).
2. MAF was replaced by the Ministry for Primary Industries (MPI) in 2012.
3. Other erosion support mechanisms available to East Coast and Aotearoa New Zealand landowners include the Afforestation Grants Scheme, the Permanent Forest Sink Initiative, and the Emissions Trading Scheme (Ministry for the Environment 2017; Ministry for Primary Industries 2018a, 2018d).
4. The remainder of the treatments took place near or around the target eroding or erosion-prone land (Ministry for Primary Industries 2014a).
5. For its part, MPI (2018b, 134) notes that "the ECFP is in the mature phase of the program uptake", with most willing participants having already joined the program in earlier years. MPI (2018b, 134) goes on to explain that ECFP administrators are now prioritizing the East Coast's worst-eroding land and working with landowners who are faced with "several unique challenges", including low income and limited or complex land governance structures.
6. The ECFP target land area was revised from 200,000 hectares to 60,000 hectares in 2000 (Bayfield and Meister 2005).

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Policy design lessons from the Erosion Control Funding Programme – afforestation through an adaptive governance lens

Sandra J. Velarde, Lisa Sharma-Wallace, Tui Warmenhoven, Pia Pohatu, Peter Edwards and Tim Barnard

Does this look like a dried riverbed? Look closer for the roof of the Barton homestead now buried in the sediments coming from the surrounding gullies. Waiapu Catchment, East Coast, New Zealand. Photo courtesy of Tui Aroha Warmenhoven

Abstract

We focus on lessons for policy design learnt from the Erosion Control Funding Programme. This programme started in 1992, and its evolution and results provide invaluable knowledge on barriers to afforestation and potential avenues to address these barriers. We track the progression of the programme from its inception until 2017, and highlight that at the core of its slower-than-expected uptake are issues of indigenous co-development of forest systems and lagging learning cycles. We recommend that institutions implementing afforestation programmes should more quickly incorporate lessons learnt in their operations, and follow adaptive governance principles from the outset in their design to increase policy uptake and engagement with local communities.

Introduction

The East Coast of Aotearoa New Zealand is the most erosion-prone area of the country and one of the most erosion-prone areas of the world. As part of the Treaty of Waitangi settlement process, the New Zealand Crown and Ngāti Porou signed a historic 100-year Memorandum of Understanding (MOU) in 2014, with the Erosion Control Funding Programme (ECFP) (formerly the East Coast Forestry Programme) as its main implementation tool. The ECFP is one of the Government's long-standing afforestation programmes, started in 1992 and situated in a historic context of systematic Māori land alienation and landowner absenteeism.

Traditional approaches to land management and decision-making have not resulted in the best outcomes

for Māori, in particular on the East Coast. A series of non-conventional approaches to decision-making, known as 'Adaptive Governance', provide a useful lens to trace the evolution of the ECFP and distil lessons that can support the design and implementation of current and future afforestation programmes in Aotearoa New Zealand, such as the One Billion Trees Programme.

Land alienation, the East Coast and the historic 100-year MOU

A brief history of Māori land alienation

Before colonisation, land ownership did not exist in Aotearoa New Zealand. Māori enjoyed fluid boundaries of 'their' lands and determined use rights based on residence, participation in the community, and good relationships within and across tribal and kinship links (Kingi, 2008). European settlement throughout the mid-1800s led to a systematic process of Māori land alienation through acquisition and individualisation in a blatant breach of the Treaty of Waitangi signed in 1840. Customary or collective land was lost into Crown title deeds which, in turn, led to individual land ownership and fragmentation. The problem was further exacerbated under the Native Land Act 1873, which required all owners to be registered in the land title, and consequently generated ownership shares so small they are virtually unusable (Lyne, 1994; Tuuta, 2013) (Figure 1).

More recently, the Te Ture Whenua Act 1993 acknowledges the importance of land retention for the benefit of Māori owners, but requires that Māori adhere to western governance structures such as land incorporations and trusts to unite the fragmented land shares created during colonisation. In the view of Coombes (2003), these structures reflect the Government's distrust of Māori effectively managing their own land.

It is in this wider context of land fragmentation, combined with landowner absenteeism, that past and current afforestation efforts exist.

The East Coast – erosion is also a symptom of disconnection from the land

The East Coast of Aotearoa New Zealand generates 40 million tonnes of sediment per year flowing directly into rivers and the ocean (Statistics New Zealand (SNZ), 2018). The region is also sparsely populated, with only 46,653 people in the entire Gisborne District. Almost 49% of the population identifies as Māori, and Ngāti Porou makes up the largest tribal affiliation in the region (SNZ, 2013).

Inseparable from the biophysical erosion of the region is the erosion of the Ngāti Porou iwi's cultural, spiritual and social values (Warmehoven et al., 2014; Scion, 2012) (Figure 2). Therefore, any effort to address the erosion must account for the desire, drive and right of Māori for *tino rangatiratanga* (or self-determination) in relation to land and other governance matters (Sharma-Wallace et al., 2019).

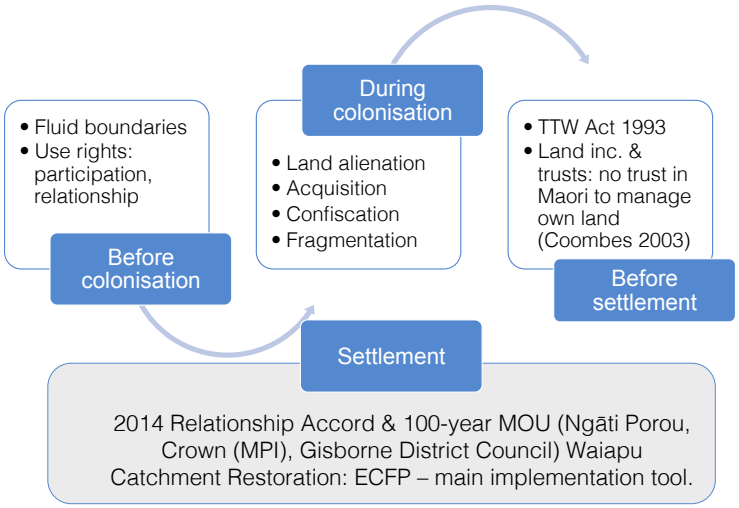

Figure 1: Historical context leading to the Erosion Control Funding Programme

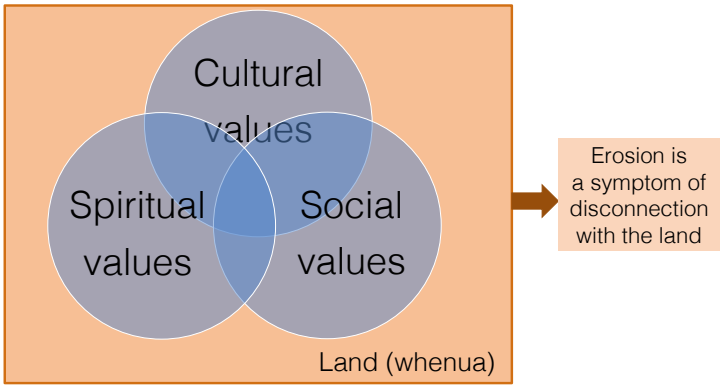

Figure 2: Links between intangible values and the whenua (land)

The historic 100-year MOU

As part of the Treaty of Waitangi settlement process, the Crown (represented by the Ministry for Primary Industries (MPI)) signed a historic 100-year MOU in 2014 with Te Runanganui o Ngāti Porou and the Gisborne District Council. This MOU outlines aspirations of 'healthy land, healthy rivers, healthy people' for the Waiapu Catchment restoration in the East Coast (MPI, Te Runanganui O Ngāti Porou & Gisborne District Council, 2014).

The ECFP afforestation programme is situated in the midst of a long settlement process and is the main implementation tool of the MOU in its first several years. The 100-year MOU is recommended reading for those who would like to understand Crown-Ngāti Porou partnerships and the spirit of the Waiapu Catchment restoration. (We do not deal with the implementation of the MOU itself in this paper.)

A different way is needed – adaptive governance

Adaptive governance is a series of methods for decision-making that recognise the complexity of people-nature problems and advocate for a flexible and

collaborative approach to help solve them. Adaptive governance responds to the local context through dialogue and sharing power, people and resources.

The 'adaptive' component of adaptive governance refers to the ability to change course based on the early results of implemented actions. 'Governance' refers to the decision-making process, including the people, power and resources involved at different levels, from local to regional to national.

Practising adaptive governance requires dialogue and collective learning from all the relevant parties. The principles of adaptive governance (Sharma-Wallace et al., 2018; 2019) can be summarised as follows:

- **Facilitating community empowerment and building capabilities:** Facilitating community-scale empowerment and engagement, and brokering collaboration and connections across a wide range of actors, scales and capabilities, by building trust and nurturing human relationships.
- **Attention to the socio-ecological and governance context:** Paying attention to the context in which decisions are made, and the development of social and physical capabilities, knowledge, resources, networks and partnerships to address this context.
- **Effective leadership and monitoring:** Supporting and institutionalising effective leadership to bring stakeholders together, coordinate governance support, design and implement innovative management ideas and mobilise communities to act, and integrating knowledge and decision-making through experiential learning and monitoring progress over time.

Methods

We tracked the evolution of the ECFP through a review of grey literature and semi-structured interviews. Grey literature was collated using Google and Google Scholar, supplemented by Cocklin and Wall (1997) and Phillips et al.'s (2013) secondary analyses of specific aspects of the ECFP. We also draw on 78 semi-structured interviews conducted in 2016 as part of an action research project on adaptive governance for enhanced environmental decision-making in the Waiapu Catchment (Edwards et al., 2018). Interviewees included 26 Waiapu community members and 52 non-hapū representatives (Pākehā landowners, resource managers, local and central government agencies, community organisations, industry groups and education providers).

The interviews highlighted the barriers and opportunities to restoring the Waiapu Catchment in the East Coast in the context of to the 100-year MOU aspirations. We document candid assessments of the ECFP, adding the human dimension to the ECFP narrative constructed from the grey literature.

Results

Using the lens of adaptive governance, we illustrate the barriers for implementation of the ECFP and the substantial changes it has undergone, both in content and scope, since its inception. As of 2017, the ECFP had planted 41,906 ha (MPI, 2018) of its 2020 target of 60,000 ha set by a Cabinet paper in 1999 (Ministry of Agriculture and Forestry, 2011). While key barriers were identified by the Office of the Parliamentary Commissioner for the Environment in 1994, major changes to the programme took six to nine years (in the best of cases), to 20 years, to be implemented.

1. Community empowerment and building capabilities

The ECFP initially presented strong barriers to uptake by Ngāti Porou, combined with delays in adapting the programme to include support for community actions and targeted enrolment of Māori landowners. These barriers include (Figure 3):

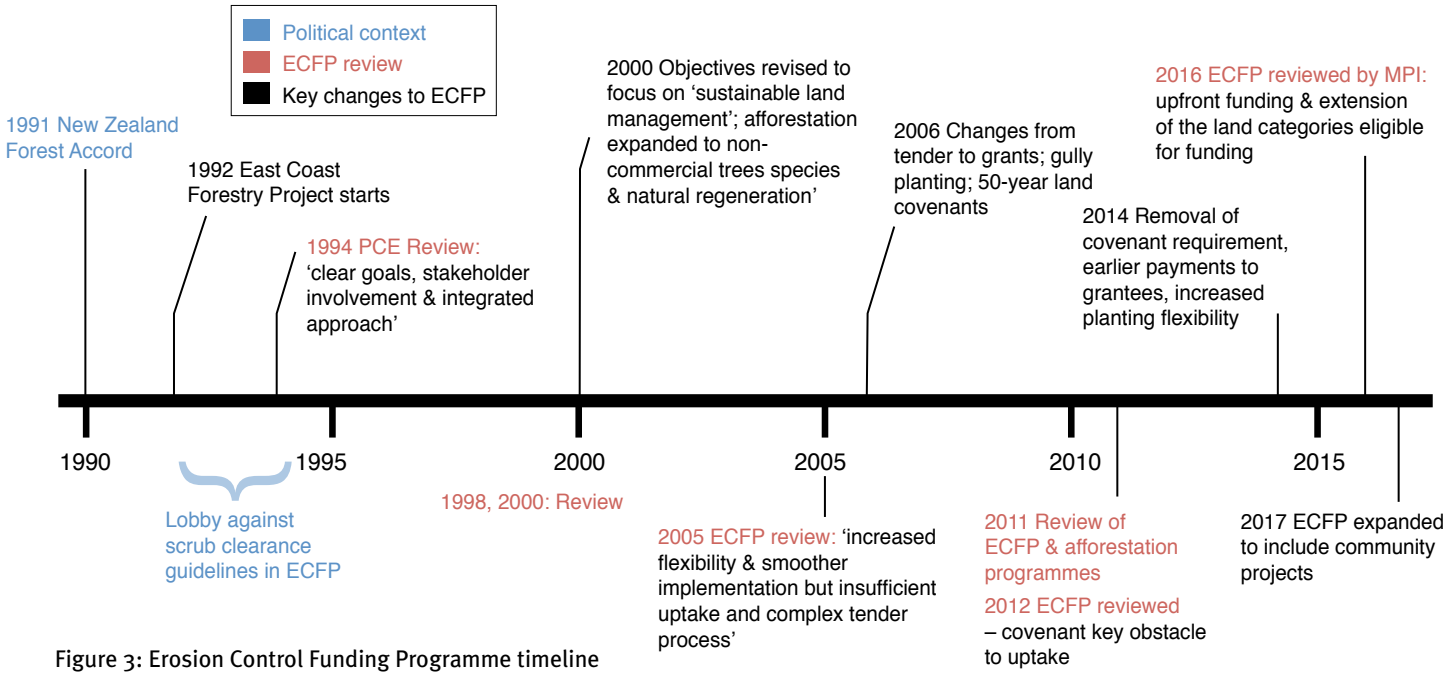

Figure 3: Erosion Control Funding Programme timeline

- Government changing the rules for native vegetation clearance within the ECFP, which effectively meant Ngāti Porou could not participate in the first four years of the programme (1992–1996)
- Requirement for forming land trusts and incorporations in order to participate in the programme.

To address these barriers, the ECFP adapted in different ways:

- Expansion to include non-commercial species from 2000
- Added resources to include one-on-one engagement and education (after 2005)
- Hiring a Māori ECFP coordinator in 2014 to increase Māori enrolments
- Including community projects in 2017.

During the development of the ECFP, Ngāti Porou was hopeful that the programme would offer a path for tribal revitalisation and self-determination (Kapua in Cocklin & Wall, 1997, 155). Specifically, they hoped to retain control of their land and forestry operations (Ngāti Porou quoted in Office of the Parliamentary Commissioner for the Environment 1994, 19-20). The newly formed company, Ngāti Porou Whanui Forests Ltd, established a joint venture with Tasman Forestry Ltd for plantation forestry.

The ECFP originally allowed for clearance of scrubland, which is the majority of Ngāti Porou land. However, environmental groups found this allowance in conflict with the New Zealand Forest Accord, a private agreement signed by a group of forestry companies that established limits on clearance of indigenous vegetation (New Zealand Forest Accord, 1991). After months of negotiations, the Government amended the ECFP to provide more protection to indigenous vegetation and Tasman Forestry withdrew from the joint venture. As a consequence, Ngāti Porou could not fully participate in the first years of the programme (Cocklin & Wall, 1997).

In 1996, Ngāti Porou Whanui Forests Ltd found a new partner and established a joint venture with the Korean company Hansol with the aim of establishing 10,000 ha of radiata pine forest on Ngāti Porou land. This new joint venture meant an 'assertion of Ngāti Porou's mana' (Mahuika in Cocklin & Wall, 1997: 158).

After the ECFP review by Bayfield and Meister (2005), funding was made available for one-on-one programme advocacy and education. In mid-2014, MPI hired a Ngāti Porou ECFP coordinator to increase Māori enrolment, noting some success (MPI, 2017a). However, multiple-owned Māori blocks were needed to come together in land incorporations and trusts to participate. Strong community participation and information sharing were lacking for most of ECFP's life:

> *I think that there has been a lot of the confusion of the actual grant scheme itself. No one has really been clear on what it looks like and what it would achieve. They will say it is erosion control when in actual fact that does not mean anything for whānau.*
>
> (Hapū interviewee, 2016)

Supporting local initiatives or the aspirations of local landowners are also important factors to overcome the perceived distrust [in the Government] in the East Coast region:

> *To me, I look at MBIE and MPI and everyone is all about how do we generate and utilise unproductive Māori land? Well, the reality is it is not your Māori land to have a say over and care for. What we need from places like that is support in terms of resources, not only financial but the science stuff as well.*
>
> (Hapū interviewee, 2016)

In 2017, the ECFP was modified to include community projects. Examples of community project topics include optimal land use for erodible land, riparian and other river treatments for erosion, skills/labour, trials of new/alternative treatments, supply of seedling and materials and governance for erodible land blocks (MPI, 2017b).

2. Attention to the socio-ecological and governance context

The ECFP has predominantly focused on technical aspects while mostly paying little attention to the socio-ecological and governance context. This resulted in two barriers to adoption:

- The requirement for upfront payment from landowners for the first six years (1992–1998)
- The requirement for a 50-year covenant in ECFP contracts established in 2005 was removed in 2014.

Although it took six to nine years, the above barriers were removed. Other major positive changes adopted by the ECFP in the last five years include:

- Providing more upfront instead of retroactive funding in 2014 and 2016
- The introduction of community-led projects in 2017
- Field days to showcase landowner erosion control practices in 2018 (MPI & Gisborne District Council, 2018).

In 1994, the Office of the Parliamentary Commissioner for the Environment called for an integrated approach to the ECFP. However, the programme has mainly focused on technical aspects and bypasses the holistic nature of the Ngāti Porou relationship with their land and the causes and impacts of the East Coast erosion problem:

> *That's what the restoration is in the larger sense. It's not the restoration just of the physical landscape. It's actually our people, of our knowledge, and our way of doing things.*
>
> (Hapū interviewee, 2016)

So if you look at it at quite high level and talk about restoration, the practices that we live by every day are restorative. So whether it's connecting with our children, with our whānau's children, children from the community, whether it's preserving water, whether it's teaching our kids not to throw rubbish on the ground …

(Hapū interviewee, 2016)

Since its inception, and until 2014, the ECFP required landowners to claim costs for establishing the trees retroactively, despite Ngāti Porou's lack of financial capital being acknowledged as a barrier from the outset (Office of the Parliamentary Commissioner for the Environment, 1994).

… You have to pay for everything and just hope and pray that they survived so you would get back the money. It was all retrospective. For want of better words, that only worked for the really big rich farms that were never supposed to be why the fund was set up in the first place …

(Hapū interviewee, 2016)

Moreover, in 2005, the ECFP introduced a requirement of a 50-year covenant on ECFP-treated land. Although this covenant was added in response to deforestation of formerly ECFP-treated land blocks, in practice this requirement reduced Māori participation. This covenant was removed in 2014.

Further barriers include a lack of information about, for example, when and how to plant (Sharma-Wallace et al., 2019). We recognise recent efforts from central government and the Gisborne District Council through field days to showcase erosion control and landowner-driven initiatives (MPI & Gisborne District Council, 2018; Māori Television, 2018).

3. Effective leadership and monitoring

Turnover in government personnel has made the handover process and learning of lessons about the ECFP extremely challenging, impacting the ECFP's design, implementation and leadership. While the ECFP has been reviewed and major changes introduced to its content and scope in the last 26 years, the time taken to incorporate these changes highlight a lack of agility of ECFP structures.

Co-creation in the design (and review) of the programme, and better communication and responses to messages from 'people on the ground' and officials in Wellington, could play a positive role. An interviewee encapsulates the intent, design and disconnection of ground issues and policy design within ECFP as follows:

Fundamentally, the ECFP was created through an agreement between Ngāti Porou and the Crown. It was not intended for everybody else, but it has morphed into something different. ECFP, in its current state, is not achieving what it should. Ideally, we sit with them and co-create what it would be looking like. My challenge has always been, with working with ministries, is that they're in Wellington. They don't actually understand how it works. They do have people on the ground, but it's the people in the ministries that decide how the money is distributed – not the people on the ground.

(Hapū interviewee, 2016)

Experiential learning is key for the effective design and implementation of afforestation policies. Barton Gully, Waiapu Catchment, East Coast. Photo courtesy of Tui Aroha Warmenhoven

Conclusions and recommendations

We conclude that the adaptive governance principles described in this paper are useful in the design and monitoring of afforestation programmes and could lead to a better uptake of afforestation programmes. Specifically, in the case of the ECFP, issues related to Māori relationships with the whenua were integral determinants of the fund's slow rate of uptake (Sharma-Wallace et al., 2019).

Lessons for the design and implementation of afforestation programmes include:

- Meaningfully include Māori landowners' aspirations, values and assets in the design of afforestation policies, accounting for the quadruple bottom-line approach that includes social, cultural, economic and environmental aspects
- Pay close attention to the local context, power relationships, equity issues and history to remove early barriers to afforestation
- Increase the capacity of Māori to participate in decision-making processes through access to science, brokers and connectors, supporting local leadership and incentivising learning between different groups
- Shortening the period between policy review and policy changes, making the learning process more agile and effective. This would also support the change of mindset from monitoring as a 'performance measurement tool' to a 'learning tool'.

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Glossary

- Mana = prestige
- Pākehā = New Zealander of European descent
- Tino rangatiratanga = self-determination
- Whānau = family
- Whenua = land.

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