



# Reforesting the grasslands of Papua New Guinea: The importance of a family-based approach



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## ABSTRACT

The complexities of Melanesian customary land tenure greatly influence the adoption of community-based reforestation (CBR) in Papua New Guinea (PNG). CBR has recently become a focus for the PNG government due to declining yield from native forests which has renewed attention on developing timber plantations to augment villagers' livelihoods. In this paper, we investigate the factors which affect adoption of timber tree-growing by farmers and communities. We assess the efficacy of a policy frequently employed by non-government organisations (NGOs) in which single or multi-clan based seedling nurseries are used to encourage tree growing. A key finding is that people's need for technical assistance is subordinate to social and cultural factors, principally the need for community harmony. Farmers' motivation to plant trees is adversely influenced by uncertainties inherent in PNG's system of customary land tenure. Interventions – in this case extension assistance to grow trees – may create or exacerbate intra- and inter-clan conflict by bringing long term uncertainties into short term focus. For villagers in PNG, as in other cultures, we conclude that key enabling conditions for collective action revolve around strengthening villagers' bridging social capital in a manner which is sensitive to their longstanding social traditions. Targeted, do-it-yourself, family assistance may be as effective as attempts to encourage collective action. The implications of our findings for Forest Landscape Restoration (FLR) which envisages a participatory approach to community engagement, are that cross-community initiatives may not be feasible without extensive investment in building social capital. Initiatives targeted at families or family-groups may be most successful.

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## 1. Introduction

Increasing the adoption of CBR<sup>1</sup> depends (*inter alia*) on supportive government or NGO policy. In PNG, government policy relating to CBR is not well developed because until recently, the focus of the PNG Forest Authority (PNGFA) has been on managing native forest. As one of the few industries which operate in remote areas, native forest harvesting has provided one of the few ways rural people can enter the formal workforce and earn wages (PNGFA, 2007). However, declining revenue because of

overharvesting, has refocused attention on plantations, such that timber plantations now are part of the PNG Medium Term Development Plan 2 (DNPM, 2015). In the National Forest Plan, the role of the PNGFA is described as 'develop and maintain community forestry with the view of empowering ... communities in ... woodlot farming' (NFP, 1991). A 'white paper'<sup>2</sup> which partly dealt with agroforestry and small-scale woodlots, was produced by the Ministry of Forests in 2004, but subsequently withdrawn. Apart from this broad statement of intent, little detailed policy has been promulgated by the PNGFA relating to how CBR might be developed. In the absence of government policy (or action), NGOs have filled the gap, often by promoting community-based nurseries in which to grow seedlings for subsequent out-planting.

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<sup>1</sup> In this paper, we use the term 'community-based reforestation' to distinguish it from native forest management, which is also known in PNG as 'eco forestry'. We use the term reforestation rather than afforestation because the PNG grasslands are anthropogenic.

<sup>2</sup> The white paper is titled 'National eco-forestry policy' (2004) and was produced under the aegis of the then Minister of Forests, the Hon. Patrick Pruaitch MP.

Given that policy implementation requires allocation of typically scarce resources, the embryonic state of CBR in PNG suggested that priorities for interventions might be found in the general literature. Byron (2001) listed the four conditions essential to small-scale forestry as land and crop tenure, a viable production technology, protection and markets. More recent reviews or meta-studies of conditions necessary for CBR often emphasise the interconnectedness of the conditions, albeit with different foci, e.g. Seymour et al. (2014) focused on tenure security, Cronkleton et al. (2012) emphasised the need to allow communities regulatory freedom and Gritten et al. (2015) discussed regulatory barriers in terms of their effect on developing livelihoods from forests. The effect of socio-economic and gender-based inequality is discussed in terms of causing the community conflict which precludes collective action (e.g. see Pulhin et al., 2007; Le et al., 2012; Baynes et al., 2015). Gilmour (2016, p.78), noted that although 'while some consistent results have emerged from reviews and studies, every one of them is subject to numerous caveats and conditions'. However, there is broad agreement that security of tenure (tree and land), intra-community governance, government support and material benefits are key enabling conditions (Baynes et al., 2015).

A more farmer-oriented perspective is offered by Franzel et al. (2002, p. 27) whereby the adoption potential of tree growing depends on farmers' perceptions of *feasibility*, i.e. whether they have the land, labour and technology. A decision to plant trees must also be *acceptable* in terms of 'profitability, feasibility, and a range of criteria that are difficult to quantify such as risk ...'. Farmers' decisions in regard to tree planting are therefore a personal decision – which if adopted by a group of like-minded people – may evolve into CBR. From a policy perspective, diffusion of tree planting technology to other people hopefully follows.

Even if woodlots are feasible and acceptable to farmers, community forestry depends on farmer's *social capital*, i.e., the relationships of trust between people which facilitate interaction in the various spheres of their lives (Nannetti and Holguin, 2015). Collective action is not feasible if the group is not able to cooperate and meet group goals. This poses difficulties for the Bonn Challenge<sup>3</sup> which aims to restore 150 million hectares of the world's deforested and degraded land by 2020 and 350 million hectares by 2030. The Bonn Challenge is underpinned by a Global Partnership on Forest and Landscape Restoration<sup>4</sup> which envisages FLR as occurring at a landscape level. Although the landscape can be defined on a case by case basis for any project or situation (Mansourian, 2016), the principles of FLR specifically include requirements for restoration to be undertaken in an inclusive and participatory manner by all stakeholders (Sayer et al., 2013; Appanah, 2016).

Melanesia and PNG in particular, offer a challenging environment for either government-led CBR or FLR. At independence in 1975, the people of PNG became citizens of a country without a sense of national identity (May, 2004; Jorgensen, 2007). Local and traditional obligations to extended family and language groups frequently supersede allegiance to the State. PNG also has a 'resource curse' i.e. abundant resources but weak governance and limited human capital, resulting in less development than expected (Laurance et al., 2012). A large proportion of the population still engage in subsistence agriculture and fire, drought, and intra and inter-clan fights are constant short-term threats (Bourke, 2000).

Before the 1950s, almost all people devoted a large part of their life to growing food in home gardens. Data from a recent study

conducted by Fisher et al. (2017), of two villages in the Ramu and Markham valleys and one village in the Madang hinterland, indicated that villagers are still heavily dependent on subsistence agriculture for their livelihoods. Villagers grow a wide variety of crops for their basic needs, with less than half of villagers' overall livelihoods generated as cash, and less than a half of that income generated through formal employment. The remainder is derived from activities such as selling vegetables in local markets. Only a few villagers cultivate cash crops, principally cacao (*Theobroma cacao*), partly because of the limited outreach of agricultural extension programs and the high cost of genetically improved seedlings. Hence, any economic activities which help people to directly meet their livelihood needs, (e.g. food, firewood or house poles), are important to them. Woodlots, particularly when inter-cropped with coffee, cocoa or vegetables, potentially meet this need.

The potential of current economic policy to develop CBR as a livelihood activity – promoted in principle by the PNGFA and in practice by NGOs – provided the impetus for this research. We present the results of our research into enabling conditions for CBR in the Eastern Highlands adjacent to Kainantu and the grasslands surrounding Ramu (Fig. 1). The purpose of our research was to ascertain the efficacy of extension assistance in assisting people to reforest grassland. Hence, our research methods were aimed at discovering the factors which either assisted people to undertake collective action in support of CBR, or dissuaded them from participating. A second purpose was to assess the feasibility of a landscape approach to forest restoration, for PNG and other countries in comparable social and biophysical situations. In the next section of this paper, we present the background to clan culture in PNG as it affects CBR. In the following section, we present the methods and results of our research. We then present the implications of our research for government and NGO-led interventions in PNG in relation to CBR and in a wider context, for FLR.

## 2. Research methods: background to PNG and the study site

PNG is situated approximately 6° south of the equator. Average rainfall is high, being 3,000 mm of rainfall per year. Hence, much of the vegetation is (or was) tropical rainforest. The total land area is approximately 46 million hectares of which some 29 million hectares is forested. Approximately 95% of all land is owned by clan members under customary land tenure arrangements (PNGFA, 2007).

This research was conducted in villages adjacent to the townships of Ramu in the Ramu and Markham valleys and Kainantu on the eastern side of the highlands. Small villages and hamlets, often with a population of only several hundred people, are typically spaced several kilometres apart and occupy land owned by a particular clan. Although PNG has over 800 separate languages, and is ethnically very diverse, the living conditions and day-to-day problems of people in the Ramu and Markham valleys are typical of many rural areas in PNG.

### 2.1. Background to farmers' livelihoods: motivations and insecurities

Food security is much greater than it was before the 1950s (Bourke, 2000). However, shortfalls still occur. The frosts and droughts of 1997–98 (see Allen and Bourke, 2000) and 2015–16 (see Walsh, 2016) severely affected families who lived in parts of the highlands. For a farmer with little or no cash income, food security is therefore a compelling motivation. The only people from whom a farmer may confidently expect assistance in difficult times are his

<sup>3</sup> See <http://www.bonnchallenge.org/content/challenge>.

<sup>4</sup> See <http://www.forestlandscaperestoration.org/what-forest-and-landscape-restoration>.

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