A BURNING QUESTION? FIRE, LIVELIHOODS AND SUSTAINABILITY IN THE NAVOSA REGION OF THE FIJI ISLANDS

A thesis presented in partial fulfilment of the requirements for the Degree of Doctor of Philosophy in Development Studies at Massey University

Trevor George King

2004

I declare that this thesis is my own work, except for those sections explicitly acknowledged, and that the main content of the thesis has not been previously submitted for a degree at any other university.

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This is to state that the research carried out for my Doctoral thesis entitled "*A Burning Question? Fire, Livelihoods and Sustainability in the Navosa Region of the Fiji Islands*" in the *School of People, Environment and Planning*, Massey University, *Turitea*, New Zealand is my own work and that the thesis material has not been used in part or in whole for any other qualification.

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a) the original work of the candidate, except as indicated by appropriate attribution in the text and/or in the acknowledgements;

b) that the text excluding appendices/annexures does not exceed 105,000 words;

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ABSTRACT

The relevance of the sustainable development approach for land conservation in tropical hill regions is often assumed, but is seldom evaluated against local realities. This study analyses the causes of land degradation and unsustainability in the seasonally fire-prone region of Navosa, Viti Levu, Fiji Islands. A complex and multi-layered set of connections exists between livelihood strategies and the environment in this region where fire is used as a tool. Traditional institutions governing land management have been undermined, however, and the sustainability of the *vanua* (or land-people nexus) is threatened.

Despite their reliance on fire, local participants reported uncontrolled burning (caused by a minority of villagers) and deforestation leading to land degradation, lower productivity and damage to fisheries. Degradation was increasing parallel with escalating human and animal populations, despite relatively equitable, resilient and livelihood-enhancing cultural institutions. Non-indigenous models of resource use, imposed by colonial and neocolonial authorities, have exacerbated land degradation and compromised indigenous resource management. Traditional tenure and leadership are impeded, leading to inequities in access to land as populations increase, and leaving local leaders unable to enact conservation. An intrusive market-based economic system encourages increased resource exploitation with little regard for environmental sustainability.

A traditional model of agroarboriculture and indigenous development in the form of still-observable (but largely disused) irrigated terraces suggests the relevance of a sustainable alternative based on indigenous knowledge. To achieve sustainable development in Navosa, the emphasis should be on socio-environmental amelioration rather than on economic development (which exacerbates degradation), and to this end, local participants expressed a desire for particular conservation strategies.

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The system of spelling adopted in this thesis for Fijian words and names is the standard Fijian orthography (Schütz, 1985). It is limited in some ways: certain details of pronunciation are lacking, for example, the macron which can be used as an emphasis to indicate long vowels. Specific consonants are pronounced as follows:

b is pronounced as *mb* as in *timber*

c is pronounced as *th* as in *mother*

d is pronounced as *nd* as in *tender*

g is pronounced as *ng* as in *singer*

j is pronounced as *ch* as in *church*

q is pronounced as *ng* as in *hunger*

Some of the terms used in this thesis may differ from standard Fijian (Bauan) language in that they reflect the different communalects or dialects used in the Navosa region: see Schütz (1962) for an analysis. In general, when I refer to local phenomena then I prefer to use the local term where it is different from the standard Fijian equivalent, however, many of the terms used by my translators were standard Fijian ones.

GLOSSARY

Note: The information on Fijian food plants and trees is available in greater detail in Clarke & Thaman (1993) and Thaman (1990a).

banidakai	*Jatropha curcas,* used to support a living fence.
bele (wata)	*Hibiscus manihot,* shrub-like green vegetable.
beto, bito	(a) Ancestral clan or subclan (Navosa, western Fiji), (b) clan house.
bila	Gardens on alluvial flatland.
bitu	*Schizostachyum glaucifolium,* indigenous common bamboo.
bitu-ni-vavalagi	*Bambusa vulgaris,* introduced large bamboo, less common in Navosa.
BP	Before present.
CDF	Commodity Development Framework, a government agricultural development scheme.
dalo, doko, doxo	*Colocasia esculenta,* taro.
dalo/doko/doxo-ni-tana	*Xanthosoma sagittifolium.*
F.D.	Field data.
F.I.	Field interview/s.
F.O.	Field observation/s.
FSP	Foundation for the Peoples of the South Pacific, an NGO.
gasau	*Miscanthus japonicus,* a very tall native grass, forms dense reed-like thickets.
i sevu	Annual first fruits ceremony.
kari	Turmeric, *Curcuma longa.*
kulu	Breadfruit *(Artocarpus altilis),* also *uto* (Bauan).
kumala	*Ipomoea batatas,* sweet potato.
laulau ni manivosi	*Mauniba, Pennisetum polystachyon,* mission (mongoose) grass.
LDC	Less developed country.

MAF(F)	Ministry of Agriculture and Fisheries (and Forests).
magiti	Food offered for ceremonial distribution.
mahogany	*Swietenia macrophylla.*
malasou, boro	*Solanum americanum,* black nightshade, wild green vegetable.
maqo	Mango *(Mangifera indica).*
masi	Bark-cloth, made from *Broussonetia papyrifera.*
matanitu	Military or governing confederation of *vanua.*
mataqali	Ancestral and landowning clan, subordinate to *yavusa.*
mauniba	*Pennisetum polystachyon, laulau ni manivosi,* mission (mongoose) grass.
MDC	More developed country.
moli, soco	*Citrus sp.: Moli kana (C. grandis,* pomelo, shaddock), *moli Taiti (C. sinensis,* sweet orange), *moli madirini (C. reticlata,* mandarin, tangerine), *moli witwiti (C. microcarpa), moli karokaro (C. hystrix), moli kula, (C. aurantium,* sour orange).
Navosa	Sub-province of Nadroga-Navosa province.
NLC	Native Land Commission.
NGO	Non-Government Organisation.
onolulu	*Piper aduncum (Yaqona-ni-onolulu, Yaqoyaqona, Yaqona* from Honolulu), common shrub on grassland.
pine	Usually *Pinus caribaea (var. hondurensis).*
quwawa	*Psidium guajava,* guava.
Roko	Administrative head of province.
seremaia	Soursop, *Annona muricata.*
sevusevu	Village welcoming ceremony.
solevu	Customary gathering, usually ceremonial.
solesolevaka	Small work group of friends and family.
suki	Fijian tobacco.
SVRDP	Sigatoka Valley Rural Development Project.
tabaiwai	Pondfields growing *dalo,* also *vuci.*

tabua	Whale's tooth, a formal token of exchange.
tavioka	*Manihot esculenta,* cassava.
teitei	Hillside gardens.
tokatoka	Ancestral subclan (mainly eastern Fiji).
turaga	Chief (usually hereditary), elder, respected person; *turaga-ni-matanitu,* governing chief; *turaga-ni-vanua* or *-yavusa* or *-mataqali* or *-tokatoka/beto/bito,* clan chiefs, in decreasing order of inclusiveness.
turaga-ni-koro	Elected administrative head of village; *turaga-ni-yasana,* bureaucratic head of province.
uto	*Carica papaya,* papaya, also *kulu* (Nawairabe), *weleti* (Bauan).
uvi	Cultivated yam, *Dioscorea sp., and others.*
vanua	(a) Nexus of place and people, land, home; (b) regional confederation of *yavusa.*
vaivai	*Leucaena leucocephala,* common agroforestry tree.
vaivai-ni-vavalagi, vaivai-ni-mocemoce	*(Rain tree) Samanea saman,* but also other large Mimosaceae *(Albizzia, sp., etc).* Common large shade and fuelwood tree.
via	*Alocasia macrorrhiza,* giant *dalo,* tuber used in emergencies.
vuci	A wet cultivation *dalo* garden, often terraced and irrigated, also *tabaiwai.*
vitua	Wild yams, often semi-domesticated.
vuvale	Family, household.
Yalavou Project	A large pastoral project adjacent to Navosa in Nadroga.
yaqona	*Piper methysticum, kava,* a beverage with a calming effect.
yavusa	Ancestral clan, largest unit of kinship associated with founding ancestor *(vu).*
yavutu	Ancestral home of clan founder.

Map of Fiji showing the main islands