

Priority Setting for Government Investment in Forestry Conservation Schemes—An Example from New Zealand¹

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Abstract: In New Zealand responsibility for funding flood protection and erosion prevention and control projects rests largely with local regional authorities. However, in 1988 Central Government decided to provide direct funding for a major forestry conservation scheme in the erosion-susceptible East Coast region. Government's investment decision was influenced by a number of factors, the most important being the extent and severity of erosion in the East Coast region and its negative impact on the region's social and economic development.

A large part of New Zealand's wealth depends on pastoral farming. Pastoral land occupies 7.5 million hectares or 28 percent of the country's land surface, much of it steep hill country, and supports about 67 million sheep, 8 million dairy and beef cattle and 1 million deer and goats (New Zealand Department of Statistics 1989). Most of the pastoral land was carved out of indigenous forest between 1840 and 1970. It has been publically acknowledged since the beginning of the present century that high soil erosion rates cause pastoralism to be an unsuitable land use over large tracts of New Zealand's steeplands. Over the last 15 years several studies (Trustrum *et al* 1983, New Zealand Ministry of Works and Development 1980) have shown that pastoralism on erosion-susceptible hill country is not a sustainable land use. Pastoral farming continues to be a major land use on some of New Zealand's most unstable hill country which, to some, may seem to be an enigma considering New Zealand's international reputation for its technically advanced approaches to conservation and protection of soil and water values. Over the last 5 decades a number of soil conservation schemes have been initiated to stabilise soil on eroding pastoral land.

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It is not the intention of this paper to unravel the reasons why unsuitable pastoral land use practices are widespread in New Zealand but rather the paper will endeavour to examine the way in which conservation schemes on eroding land are initiated and funded and how priorities are set. The role of Central Government will be examined. To this end the paper will concentrate on a forestry conservation scheme known as the East Coast Forestry Project located in the North Eastern part of New Zealand.

In New Zealand, forestry conservation schemes generally involve the blanket planting of eroding land with fast growing exotics, usually *Pinus radiata* but other species of conifers, *Salix* or *Populus* are also often used. Open plantings of poplars are a commonly used soil stabilisation technique in poorly-drained gullies and other localised areas of instability.

POLICIES TO ENCOURAGE EROSION AND FLOOD CONTROL

There exist a number of Government policies that aim to provide protection against or control of erosion and flooding in New Zealand.

(i) Land use Controls

There exists legislation known as "the Soil Conservation and Rivers Control Amendment Act 1959" which was again amended in 1988, which provides catchment authorities with the power to control land use to prevent erosion. For instance catchment authorities can require land owners to plant trees on eroding land. However, this legislation is rarely used to enforce tree planting.

(ii) Catchment Grants

The Government contributes to flood protection and erosion control schemes through grants for specific works administered by regional catchment authorities. Nationwide catchment grants have averaged about \$90 million per year over the last 20 years. It is planned to replace grants for specific works with a block subsidy system in the near future.

(iii) District Planning Schemes

These schemes can be used under the Town and Country Planning Acts (1954 and 1977) to designate areas of land for particular ultimate land uses (for example forestry). District planning schemes have not been effective in changing land use.

(iv) Disaster Relief

The Government has in the past contributed substantial amounts of money to disaster relief from flooding and siltation. For instance between 1968 and 1981 there were 7 major floods which cost the Government \$2.9 billion or \$223 million per year. Some of this money has been used for tree planting to stabilise soils and for retiring land from grazing.

(v) Other Subsidies and Grants

In the past the Government provided for encouragement of farm scale forestry and agriculture conservation schemes through a variety of grants and subsidies. However, the present Government has introduced a market-led development strategy for New Zealand which has involved the removal of agricultural and forestry grants and subsidies. This has discouraged private afforestation and other conservation measures by private land holders.

Since 1984 the New Zealand Government has reshaped and reformed local (Regional) Government. The end result has been the amalgamation of more than 600 separate public agencies into 94 new district and regional

bodies. New legislation is presently being introduced under the general title "Resource Management Law Reform". Essentially the new legislation will consolidate a large number of existing pieces of legislation covered by a variety of Acts and replace them with a single Resource Management Act. Some of the policies outlined above will probably disappear with the introduction of the new Act which aims to provide Regional Governments (Councils) with greatly increased responsibility for managing natural resources and funding conservation schemes. Central Government is already playing a much reduced role in funding land use projects and conservation/erosion control/flood control schemes compared to the recent past.

EAST COAST FORESTRY PROJECT

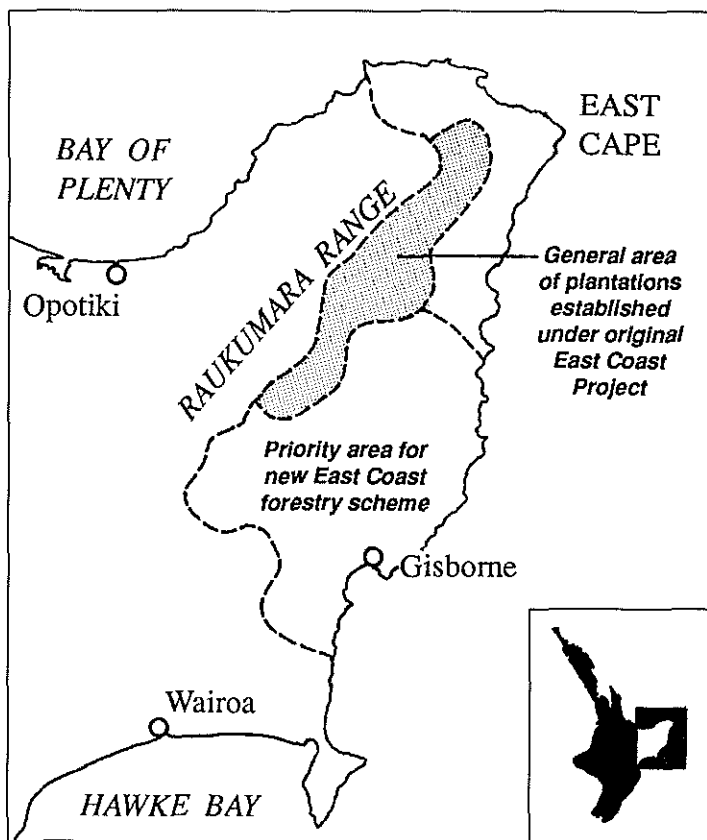


Figure 1: Map showing East Coast region and general area of the East Coast forestry scheme

A major economic appraisal of land use and development options for about 6,500 kilometres² of severely eroding pastoral steeplands of the Raukumara Peninsula led to the initiation of a large scale forestry conservation scheme in 1969. The original aim was to plant approximately 1,000 kilometres² of fast growing exotics, mainly radiata pine, at a rate of about

2,500 hectares per year. By 1987 when the scheme was halted, 36,100 hectares of dual purpose protection/production forest had been established at a total cost of \$229 million. In addition to afforestation a large number of on-farm conservation schemes covering 28,200 hectares of sensitive terrain, had been implemented by 1987. Government contributed 64 percent of the total cost of \$14.3 million for these schemes.

The on site benefits of afforestation include substantially reduced earthflow movement rates, cessation of gully processes and a marked reduction in shallow landsliding (Pearce *et al* 1987). To date the downstream benefits have not been quantified although in several upper catchment tributaries there are strong indications that a reduction in sediment supply from afforested slopes to stream channels is resulting in stream channel degradation.

Other benefits resulting from the East Coast forestry project are the commercial returns from the production of logs after the forest is 25 years old. Recent projections by the Ministry of Forestry³ suggest both existing plantings and future plantings are commercially viable in most areas except the areas to the far north and west of the East Coast region. The project also provided social benefits as it helped to prevent rural depopulation and unemployment in this rather isolated and economically depressed region.

EFFECTS OF CYCLONE BOLA AND SUBSEQUENT GOVERNMENT DECISIONS

When a subtropical cyclone, Cyclone Bola, moved across northern New Zealand between 6 and 9 March 1988 the torrential rainfall that fell on the East Coast region caused severe landsliding, erosion, flooding and siltation. Pastoral land was particularly damaged. Some pasture slopes lost 70 percent or more of their grass cover to shallow landslides. However, on hillslopes protected by mature native forest and older pine forests, landslides were less frequent. Damage to farms, forests, horticulture, roads, bridges and houses exceeded \$120 million. The Central Government contributed approximately \$80 million to the East Coast region as disaster relief to help defray the cost of damages resulting from Cyclone Bola.

³Unpublished data, Ministry of Forestry, Wellington, New Zealand.

The impacts of Cyclone Bola extended into the socio-economic area. The East Coast is presently one of the most depressed regions in New Zealand. The region is characterised by a declining total population, falling property prices, a high economic and social dependency on agriculture and forestry which account for 23 percent of the total employment, and a high Maori population which comprises 37 percent of total East Coast population (New Zealand Officials Committee Report 1988). The severe impacts of the cyclone on the agriculture/forestry industries and the inability of the region to cope with the damage from a financial point of view were important factors in subsequent Government decision making. The results of the storm reinforced the fact that the East Coast was New Zealand's most susceptible region to widespread erosion and flooding damage and that erosion and flooding negatively influences the regional economy more than in other parts of New Zealand. The cyclone also highlighted the need for better land use on much of the unstable hill country in the region.

The severe damages caused by the cyclone (the largest of five severe storms to influence the East Coast in 20 years) was a major factor in the setting up of a Government Officials Committee to examine the original East Coast Project and an earlier review of this project. Among other things, the Committee was required to make recommendations to the Government on the future of the project and the Government's involvement in it. In its recommendations the Committee was split between those who recommended no Central Government funding should be provided for restarting the East Coast forestry project and those who strongly recommended that Central Government should intervene and provide additional funding for conservation plantings.

GOVERNMENT DECISIONS

In 1988 Government agreed to provide \$8 million to directly subsidise a new East Coast Forestry Conservation Scheme on the East Coast pastoral forelands. The funding was to be spread over a 5 year period; 1989 to 1994; and was aimed at establishing about 3,000 hectares of protection forests per year. The scheme was to be targeted at erosion control on unstable pastoral hill country upstream of Gisborne City, Poverty Bay flats and Tologa Bay where the greatest assets at risk are located. The Government also agreed that the funding would be

provided as a subsidy covering two thirds of the cost of establishment and that the remaining one third of the costs should be met by the region through the East Cape Catchment Board.

The Government also insisted that all protection forests would come under covenants which precluded logging for at least 25 years after planting and then only with the permission of the local catchment authority.

The main factors influencing Central Government to invest in such a scheme included:

- . The real extent of severe erosion which is much greater than elsewhere in the country and has substantial negative impacts on the region's social and economic development.
- . The need to carry out erosion control quickly and comprehensively to reduce future costs of erosion and flood damage, both to the region and to the Central Government.
- . The lack of money and resources within the region for carrying out a comprehensive erosion control scheme.

Under the existing economic environment in New Zealand and the Government's intentions to devolve all responsibility for resource management to regional authorities, it is most unlikely that other regions in New Zealand will qualify for Central Government funding for major forestry conservation schemes in the future.

PROGRESS TO DATE

Despite the generous subsidies available for establishing conservation forests on unstable East Coast hill country, the East Cape Catchment Board who administer the Scheme, have found it difficult to obtain agreement from landowners to provide land for planting. After two planting seasons only about 4,500 hectares have been afforested. Farmers' reluctance to provide erosion prone pastoral land for afforestation stems from several factors:

- . Concern that afforestation of sizeable portions of farmland will result in a decline in the stock carrying capacity of farms. The Department of Lands and

Survey (1977) concluded that forest planting of poorer grade land within a farm unit generally has little or no impact on stock numbers. However, in the case of a few farm units more than 50 percent of the farm area needed afforestation. Naturally, farmers were reluctant to yield up large parts of their farms for forestry and substantially reduce stock numbers.

- . A perception that tree plantations would not yield any return to the land holder in the foreseeable future but rather, would result in additional silvicultural and fencing costs.
- . The low profitability of many pastoral farms and low farm incomes which prevents landholders from being attracted by the long term benefits resulting from conservation forestry.

If unstable farmland is not relinquished for conservation forestry at the rate required by the East Coast Forestry Project, then the local regional authorities (the East Cape Catchment Board) may have to enforce afforestation in the priority areas requiring protection. The five year scheme aims at afforesting 15,000 hectares. However, this represents only 20 percent of the total area of severely eroding pastoral hill country in the East Coast region. There is clearly a need for a long term land use rationalisation scheme which will lead to the close integration of exotic and native forests, pastoral farming, horticulture and viticulture. Carefully located forests on the steeper unstable slopes and along riparian areas would provide improved protection to fertile valley bottoms and river plans where horticulture and other types of intensive farming are concentrated. Government Officials and East Cape Catchment Board staff agree that such a scheme would substantially increase farm productivity and reduce the costs of sustaining farming and horticulture on the better classes of land by reducing recurrent storm damage. In addition, recent Ministry of Forestry analyses of the economic viability of exotic forestry on the East Coast indicate that radiata pine forestry on the pastoral forelands has potential internal rates of return exceeding 7 percent⁴.

⁴Unpublished data, Ministry of Forestry, Wellington, New Zealand.

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