



Review of MAF Afforestation Schemes:

Permanent Forest Sink Initiative

Afforestation Grant Scheme

East Coast Forestry Project

Sustainable Land Management (Hill Country Erosion) Programme

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Requests for further copies should be directed to:

Publication Adviser
MAF Information Bureau
P O Box 2526
WELLINGTON

Telephone: 0800 00 83 33
Facsimile: 04-894 0300

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**Final report of the Review Panel
23 June 2011**

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Background

The review of afforestation schemes administered by the Ministry of Agriculture and Forestry (MAF) was initiated by the Minister of Forestry and the Minister for Climate Change Issues in 2010. The review covers two schemes developed under the Government's climate change policies: the Permanent Forest Sink Initiative (PFSI) and the Afforestation Grant Scheme (AGS); and two schemes developed under the Government's sustainable land use policies: the East Coast Forestry Project (ECFP) and the Sustainable Land Management (Hill Country Erosion) Programme (HCEP).

A Review Panel (see Appendix Four) was established by the Ministers in November 2010. Its terms of reference (see Appendix Five) focus on establishing the levels of effectiveness and cost-efficiency in the delivery of each scheme, improvements that are warranted, and identifying their future roles (with the exception of the ECFP) in contributing to the Government's climate change and sustainable land management objectives.

The review process commenced with the release of the *Review of MAF Afforestation Schemes discussion document 2010*¹, inviting public submissions. A total of 52 submissions were received. The Review Panel conducted consultation meetings with 21 agencies or individuals, and telephone conference calls with a further four.

¹ Ministry of Agriculture and Forestry, 2010. *Review of MAF Afforestation Schemes discussion document 2010*, Ministry of Agriculture and Forestry, Wellington, December 2010.

Preamble

The Review Panel sought to have clear objectives, to institute separate payments for separate services, and to ensure consistency between schemes and across the country.

The Panel supported the continuation of all four afforestation schemes, albeit with modification to the overall structure and with amendments to each component. Detailed recommendations for each scheme are provided separately in the relevant sections.

Pragmatic conclusions differ from the ideal situation because of:

- Uncertainty over the international rules (and therefore the price of carbon) at the end of the first Commitment Period;
- Probable Government unwillingness to embark on new funding following recovery from the Christchurch earthquake.

The **ideal** situation would be as follows:

- There should be total separation of payments for carbon and for other services provided by forestry (erosion control, water quality, biodiversity, etc). Separate services merit separate – and additional – payments. Multiple payments ensure that projects which meet multiple objectives are more likely to be approved. Moreover, with clear objectives for each payment, it is easier to monitor and assess progress and achieve accountability. In the current situation, the multiplicity of objectives for three of the four schemes (some dictated by Cabinet decisions, others inferred by departmental officials) make it impossible to derive cost/benefits and achievements for each scheme.
- The **PFSI** should be a subset of the ETS, under the same Act of Parliament. This would make it easier to explain and promote the scheme, and it would also minimise administrative costs. The PFSI would be solely for carbon, and – while being fiscally neutral to the Crown – would serve the Government’s inferred purpose of enhancing carbon sequestration and mitigating anthropogenic climate change.
- The **AGS** would be solely to promote carbon sequestration by providing money up-front for those (mainly smaller growers) with cash flow difficulties. It would be administered entirely through the public pool, by fixed grant (not tender), and be available in full regardless of income from other schemes for non-carbon environmental services. It would be limited to areas 5-300 hectares in extent, because very small areas are expensive to administer compared to the small benefit they provide, and because tree growers with larger areas can normally overcome cash flow difficulties by other means.
- There would be no “low sequestration” category of **AGS** funding aimed at indigenous plantings, as the discounted value of carbon sequestration from this source is inevitably insufficient to provide any realistic incentive. Many of the submitters indicated a strong desire to encourage the regeneration of indigenous forest, but if this is the real objective (rather than carbon) this goal is best achieved by targeted incentives, or such mechanisms as “biodiversity credits”.
- The **HCEP** is concerned primarily with erosion prevention, and should incorporate a subtle combination of both “stick” and “carrot”. Current policy by regional councils appears to

lean heavily towards the sole use of the carrot. Those continuing to cause pollution by allowing erosion-prone land uses are eligible for incentives to discontinue their activities or – at most – face gentle persuasion to change. Despite landowner resistance, the taxpayer would be better served by placing more emphasis on the “polluter pays” principle and enforcing the Resource Management Act 1991.

- The upper limit of five hectares for **HCEP** money was designed to avoid overlap with the AGS range of areas, but if the AGS was operated as a separate carbon scheme this rationale would no longer exist. In the ideal situation, there is no case for an upper limit of any magnitude.
- There is no reason (specific to erosion prevention) why the East Coast should be singled out for special treatment, with its own scheme. Soil erosion can be as problematic in other regions. The Panel notes, however, that the Review’s terms of reference do not allow major changes to the **ECFP**. In the ideal situation, there would be a single nationwide programme charged with the task of erosion prevention. This programme would incorporate the best features of both the HCEP and the ECFP.
- The **ECFP** should operate independently of carbon. In other words, the grant should not be reduced merely because the trees will generate carbon as a by-product.

Because of the **pragmatic** considerations listed at the start, the ideals listed above need to be modified as follows:

- The Panel recommends maintaining separate legislation for the **PFSI** and the ETS until the post-2012 situation becomes apparent. It is envisaged that the ETS will be subject to continual modification, and merging of the two schemes would downgrade the tradable value of the PFSI-generated units by increasing the uncertainty over their enduring worth. The contractual nature of the PFSI differs from the legislative structure of the ETS, and is seen by submitters to be less subject to modification by political whim. The Forests Act 1949 generates less public controversy than the Climate Change Response Act 2002, and therefore the PFSI – enshrined as it is in the former – is believed to be more robust.
- Although the **AGS** can be seen as primarily for carbon sequestration, in reality the “regional pool” component is essential for the continuation of erosion control. Regional councils use AGS funding, in addition to funding from ratepayers and from individuals, to undertake erosion-control programmes in their regions. Therefore, directing this programme entirely towards the public pool on the basis of carbon value-for-money, would result in cessation of much of the nation’s work in prevention of erosion. The Panel therefore recommends that the 50 percent of AGS funds currently earmarked for the “regional pool” be renamed (for example, as the Soil Erosion Fund) for use in priority catchments identified by the regional councils, and be divorced in terms of assessment from its carbon sequestration function. This money would be used solely for costs of afforestation and would be separate from the existing **HCEP** funding which is administered differently and which can be used for erosion prevention not directly involving afforestation.
- The **AGS** is a mechanism to purchase carbon in advance of sequestration. This is an activity which may be better provided by the private sector, although it may be useful for strategic reasons for the New Zealand Government to have a domestic source of carbon credits. Therefore funds for the public pool of the AGS should be provided solely by the private sector wherever possible. Government could assist the AGS by promoting, administering and policing the scheme on a cost recovery basis (through receipt of some carbon credits).

The AGS should not be limited to any specific timeframe (e.g. 10 years) and should be flexible as regards species, regions and regimes. Funds can be paid on the best (MAF-sanctioned) estimates of the actual carbon sequestered for the contractual period, with a true-up towards the end of the period. The Panel has noted that the current inflexibility of categories is creating an anomaly (e.g. applicants in the “fast-growing” AGS pool have a high proportion of Douglas-fir growers who are assessed at the rate of radiata pine, but who sequester considerably less carbon).

Executive Summary

This Review of MAF administered afforestation schemes involves the:

- Permanent Forest Sink Initiative (PFSI), which commenced on 1 December 2007;
- Afforestation Grant Scheme (AGS), which commenced in 2008/09;
- East Coast Forestry Project (ECFP), which commenced in 1993; and the
- Sustainable Land Management (Hill Country Erosion) Programme (HCEP) which commenced in 2007/08.

The objectives for the review are to establish the levels of effectiveness and cost-efficiency in the delivery of each scheme, improvements that are warranted, and to identify their future roles (with the exception of the ECFP) in contributing to sustainable land management and climate change policy objectives.

The review is held against a background of great uncertainty over the international rules (and therefore the price of carbon) at the end of the first Commitment Period of the Kyoto Protocol.

Permanent Forest Sink Initiative

The PFSI has a single purpose of enabling landowners to access the value of carbon sequestration. It does not involve Government grant funding and is not a time bound scheme, but has been in operation for only three years.

Achievements

As of March 2011, 31 PFSI covenants covering 7141 hectares were registered. A further eight covenants had been approved, but not yet registered or withdrawn.

Of the 7141 hectares of forests under registered PFSI covenants, 4355 hectares are exotic forests (61 percent) and 2787 hectares are indigenous forests (39 percent). While not specifically identified, there is in excess of 1000 hectares of what can appropriately be termed new forests either registered under the PFSI or with applications being processed.

The number of applications has declined since 2008/09, possibly due to the introduction of the ETS (Forestry). However, submissions to the Review Panel have referred to PFSI projects under consideration that cover significant areas of forest.

The numbers and amounts of carbon unit requests and approvals have increased constantly since 2008, with a total of 246 793 AAUs having been approved for allocation by the end of 2010.

The scheme delivers co-benefits to the Crown, local authorities and landowners in terms of biodiversity, water, soil and carbon values and contributes to sustainable land use.

In summary, the PFSI has provided a small-scale, niche mechanism built around permanency of forests that is regarded as having less uncertainty than the ETS (Forestry), and has enabled landowners to access regulatory and voluntary markets for carbon. It is premature to draw definitive conclusions on the success of such a different forestry scheme after only 3 years.

Costs

The Forests Act requires administration costs that are not provided for by money appropriated by Parliament to be recovered. Regulations set out fees and charges that must be paid by PFSI applicants.

For the years from 2007/08 to 2010/11 the total administration cost is estimated to be \$896,000, with direct costs accounting for \$806,000. These costs are derived from an estimate of staff numbers dedicated to the PFSI. Application fees (\$500) have recovered only \$21,000, and a very small amount is understood to have been recovered through other processing charges. The net cost to the Crown of administering the PFSI for this period is approximately \$874,000.

Expressed as cost per hectare-approved, the direct cost has declined from \$375 per hectare to \$84 per hectare over the four years (or \$391 to \$93 per hectare for total cost).

Funding for the PFSI is provided under Output 4.2 of the 2010/11 MAF Output Plan: Vote Agriculture and Forestry that covers the indirect costs and those direct costs not recovered.

Over time, the policy on cost recovery appears to have moved from recovering all costs from landowners, to recovering direct costs (like the ETS (Forestry)), to recovering a very small percentage of costs.

Implementation issues

PFSI and ETS

Submitters who are involved in the PFSI through the marketing of AAUs, promotion of the scheme or facilitation of landowners to join the scheme, are strongly of the view that it should run alongside, but be independent of, the ETS (Forestry), which is seen by some to be a “political football”.

While some of the reason for independence from the ETS (Forestry) may be more about perceptions than realities, perceptions influence decisions and actions in the carbon market, and by investors in PFSI forests.

Moving the PFSI into the Climate Change Response Act 2002 would be a reasonably complicated policy and legislative exercise, not least in relation to existing forest sink covenants and how they should be treated.

The Covenant

The registered covenant is the mechanism that imposes forest permanency, which is important for purchasers of PFSI carbon credits and regarded by many submitters as the heart of the PFSI. Coupled with the restrictions on harvesting, these make the PFSI fundamentally different to the ETS (Forestry), with carbon credits that are more highly valued by international markets.

To Maori, a 50-year covenant is seen as land alienation and this hinders much potential Maori land from entering the PFSI. A shorter covenant (25 years) may be found acceptable by the Maori Land Court. The dilemma here however is that if the termination period for the covenant was reduced from 50 to (say) 25 years, the concept of forest permanency could be severely weakened (forests could be cleared after 25 years, depending on rules in district plans).

The Review Panel sees three possible options in response to this issue:

1. The PFSI should be further strengthened by prohibiting any harvest. Given no harvesting, the covenant period can be reduced to 25 years without excessive loss of credibility.
2. The PFSI rules regarding harvest should be retained, but a special provision be included to reduce the covenant period for Maori land from 50 to 25 years. International acceptance of the rights of indigenous peoples should ensure that the scheme maintains its market premium.
3. The existing rules on the 50-year covenant period and the 99-year harvesting restriction should be retained to support permanency, because too many amendments can reduce the scheme's credibility for little gain and a significant percentage of participants favour a harvesting provision.

Eligibility of regenerating indigenous forest

For regenerating indigenous forest it is not appropriate to apply the requirements of the forest definition on a hectare by hectare basis due to the inherently high level of variability. Also, rather than focusing on imprecise analysis of aerial imagery to determine what vegetation is (or is not) present (young seedlings can not be detected), and the age of that vegetation, the emphasis should be on the timing of human activities to bring about land use change (for example, destocking, fencing off from other land).

Carbon measurement

The carbon lookup table is too optimistic for indigenous forest and a more accurate table should be prepared. The radiata pine tables may be too conservative.

Risk and insurance

Perceived risk has stopped people from enrolling into the PFSI scheme. Commercial insurance against carbon stock losses is evolving, but premium terms are not known. A Government supported or facilitated self-insurance scheme could help overcome the perceived risk.

Harvesting

The harvesting option was seen by some as a strength and by others as a weakness of the scheme in terms of perceptions by the markets.

MAF processing time

Concerns have been raised regarding MAF processing times for PFSI applications, particularly where they involve regenerating indigenous forests.

Future roles

Government's motivations for the PFSI and its purpose remain valid, and the PFSI should continue. In addition to issues raised above, there are several other areas where the PFSI could be improved by adopting features of the ETS (Forestry), and bring about greater consistency and alignment with the ETS (Forestry). These changes, while not urgent, could be implemented through amendments to the PFSI Regulations.

Recommendations

The Review Panel recommends:

1. Continuing the PFSI;
2. Maintaining separate legislation for the PFSI and the ETS (Forestry) until the post-2012 situation becomes apparent;
3. Maintaining the current covenant and harvesting option;
4. Engaging in dialogue with the Maori Land Court to establish a clearer basis for adopting PFSI covenants under Trust orders;
5. Introducing eligibility criteria for regenerating indigenous forests that operate on a management unit basis and focus on human activities to achieve land use change;
6. Progressing work with Landcare Research to revise the indigenous forest lookup table, and considering the reliability of the radiata pine tables;
7. Investigating a self-insurance scheme with either the Government withholding some carbon credits from individual participants or facilitating the development of a scheme administered by the participants;
8. Addressing administrative improvements identified in Table 6 (page 29);
9. Recording and monitoring the actual costs of administration.

Afforestation Grant Scheme

The AGS has carbon sequestration, including creating units at least cost to the Crown, and sustainable land use objectives. It commenced in 2008/09 and operates through a tendered public grant pool and a fixed regional grant pool, with funding ending in 2012/13. The AGS is also an important mechanism for implementing farm plans under the HCEP.

Achievements

Some 3279 hectares were planted in the first two years of operation, and a further 6380 hectares have been, or are expected to be, approved for planting in 2010/11 and 2011/12. A high proportion of approved planting has been planted to date.

Only about 849 hectares of planting have eventuated, or are expected to eventuate, under the low carbon sequestration category for the years of operation to 2011/12.

Average grant rates have been \$1,700 per hectare for the public pool, and \$2,100 per hectare for the regional pool

The regional pool has had a strong focus on the mitigation of soil erosion with about 46 percent of the area established being on land use capability class 7e land (which may account for the higher grant rate per hectare), compared to 26 percent for the public pool. While all grants in the regional pool must achieve a minimum co-benefit score, grants in the public pool have also achieved co-benefits with more than half achieving water conservation benefits and a quarter achieving soil conservation benefits.

Costs

The AGS was established with funding for six years, but Government expenditure reviews reduced the annual grant funding and the length of the programme to five years. Over that period \$23.5 million has been allocated to grants.

The Crown also incurs the MAF costs for administering the scheme. For the public pool only derived costs are available. For the regional pool the administration costs are those incurred by the regional councils, of which MAF reimbursed about half in 2009/10 on the basis of \$5,200 per approved grant, plus a \$30,000 annual fee.

It was only possible to estimate the total administration cost for 2009/10, which was \$527,000, of which MAF's share was \$467,000.

While the Crown pays the grant plus most of the administration costs it will receive the carbon credits for the first ten years growth of the AGS forests. MAF projections indicate that 1.6 million tonnes of CO₂ will be sequestered over those ten years, with carbon credits having a Net Present Value of \$2,416 per hectare (12 percent discount rate and \$22 per tonne of CO₂). With total grant costs ranging between \$2,000 and \$2,400 per hectare (from 2009 to 2012), these results suggest fiscal neutrality for the scheme (given the base parameters for the discount rate and carbon price).

Implementation issues

Multiple objectives and weighting systems

The AGS has objectives concerning carbon sequestration, mitigation of soil erosion and creating carbon credits at least cost to the Crown, with weighting systems based on soil conservation, improved water quality and improved biodiversity. Multiple objectives create degrees of conflict, and consequently the AGS has not achieved optimisation of any objective. Maximising carbon sequestration and delivering carbon credits at least cost are not achieved by establishing forests on sites with severe soil erosion.

If carbon sequestration is the priority then the weighting systems are questionable.

Two pools or one?

There would be administrative advantages and efficiencies resulting from a single funding pool and allocation panel administered by MAF. Regional councils would operate as land/grant recruitment agents and be represented on the allocation panel.

Grant rates

For the last two years the AGS has been significantly oversubscribed. This suggests that grant rates could have been lower in order to balance demand for grants with supply of funds.

Tendered versus fixed grant

A tendered grant can promote cost efficiency by imposing a competitive process, but it also imposes uncertainty and inconvenience for applicants that act as disincentives. With several years of operation under the public pool, the tendered grant has provided guidance on grant rates.

Low carbon sequestration category

The low carbon sequestration category fits poorly with the objectives of promoting carbon sequestration and carbon credits at least cost to the Crown. The mainly indigenous forest proposals have difficulty meeting the establishment requirements, and many of the applicants have been referred to the PFSI. The category should not be retained in any future AGS.

Recognition of growth profiles for different tree species

Planting fast growing species such as radiata pine will probably provide sufficient carbon credits to the Crown under the ten-year agreements to compensate for the costs of the grant, and in some situations may more than compensate. Where slower growing species such as Douglas fir are planted, the Crown will receive relatively few credits and the cost to the Crown will be a significant proportion of the costs of the grants. A more flexible grant agreement would enable a better balancing of costs and credits.

300 hectare application limit

Applications are limited to a maximum of 300 hectares, making carbon sequestration benefits available to small-scale forest growers who may face cash flow constraints. This continues to be a relevant consideration, and for those wanting to plant larger areas the ETS (Forestry) is better suited.

Expense transfer

Some projects are not completed for legitimate reasons during the funding year, and an expense transfer is required for which there is no certainty. Multi-year appropriations would address this situation.

Private funding

The possibility has been raised of private enterprise working in partnership with the Government to deliver the AGS i.e. private funding of the grants and MAF administration with a split in the allocation of the credits. Such a partnership would focus the scheme on a single objective of maximising carbon sequestration, with no secondary objective targeting severely eroding land.

The operational details of such a scheme can only be determined if the Government opted to explore this opportunity. In times of tight restraint on Government spending, this could be an appealing opportunity for Government to achieve greater sequestration of carbon and contribute climate change mitigation benefits.

Grant capitalisation into land value

Concern has been raised that the value of the AGS grants may be capitalised into land values. This is unlikely to be a significant issue given that the AGS can only facilitate about 3000 hectares of planting nationally per year.

Future roles

Three future options emerge:

1. The status-quo (with the scheme finishing in June 2013);
2. Continuation on the same basis, but with operational improvements;
3. Continuation, but as a new scheme where environmental services are separated.

As the objectives remain valid, termination of the scheme in 2013 is not desirable. If the AGS continues beyond this date, improvements can be made to make it more cost effective (as discussed above). However, the preferred option 3 is for the objectives to be delivered under new models: carbon sequestration under a NZ Carbon Forestry Initiative (privately and/or Crown funded), and soil erosion under a NZ Soil Erosion Forestry Initiative (combining the HCEP and the ECFP post-2020).

Recommendations

The recommendations below refer to that part of option 3 that concerns carbon sequestration (see pages 44-45). The part concerning soil erosion is addressed in the recommendations under the HCEP.

The Review Panel recommends exploring the option of a new AGS post-2012/13 (Carbon Forestry Initiative) with grant funding sourced from the private sector, and with:

1. A single objective of carbon sequestration;
2. One funding pool (and no low sequestration category) operating through a fixed annual grant potentially administered by MAF;
3. A maximum grant rate set by the value of carbon, but with a strong emphasis on balancing the annual demand for grants with supply of grant funding;
4. More flexible grant agreements that recognise the different growth profiles of major species (including indigenous species), possibly based on varying durations;
5. Operating details being developed between the Government and any potential private funder;
6. Recording and monitoring of administration costs.

East Coast Forestry Project

The ECFP is grant scheme that was established in 1992. It has a goal of targeting the worst 60 000 hectares of eroding land in the Gisborne District, and has Government endorsement and approved funding to 2020. Targeting of land is supported by rules in the Gisborne District Council's Combined Regional Land and District Plan.

Achievements

The ECFP has resulted in 35 552 hectares being treated through afforestation, reversion or pole planting, of which about 24 000 hectares are target land. Between 2007 and 2010 some 1559 hectares of forest and poles and 1313 hectares of reversion were established (a combined average of 718 hectares per year). In 2010 approvals were made for a further 5745 hectares of forest planting (in the next three years), 498 hectares of reversion and 451 hectares of pole planting.

The ECFP has struggled to use available funding and deliver significant areas of afforestation, reversion and pole planting. This may change if it successfully operates in tandem with the ETS (Forestry) and the PFSI.

Costs

The ECFP receives \$4.5 million per year of Crown funding. Grant rates for afforestation range from \$1,476 to \$2,280 per hectare (depending on distance to port), \$1,512 per hectare for reversion, and 70 percent of actual and reasonable costs for pole planting.

Administration is estimated to cost about \$400,000 per year (but the cost is not recorded), leaving \$4.1 million for grants. However, from 2007 to 2009 total spending has been between \$1.7 and \$2.2 million per year. Much higher annual amounts will have been allocated but not spent due to the high drop out rate from grant approval to implementation.

Implementation issues

High drop out rate

Approved areas can be planted in any nominated year up to three years after the application. In 2007 some 2042 hectares were approved for planting. In the three years from 2007 to 2009 only 892 hectares were actually planted (and this presumably includes some areas approved in other years). The drop out rate appears to be in the order of sixty percent of the approved area. Reasons may include the need for bridging finance, complications in achieving sign-off for multiply-owned Maori land, and a lack of genuine interest in undertaking land use change.

Covenants

Fifty-year covenants were introduced in 2007 in response to instances of deforestation. They bind future landowners whereas a contract may oblige a landowner to assign the contract to a subsequent landowner, but the terms cannot necessarily be enforced against that owner. Their disadvantages are that they add complexity for participants and the Maori Land Court is unlikely to agree to Maori land alienation for this length of time.

Deforestation can be addressed through policies and rules in the Combined Regional Land and District Plan, the provisions in agreements between the Crown and the grantees, and through deforestation liabilities under the ETS (Forestry) or PFSI for those who also opt for these mechanisms.

Policy on ECFP and ETS (Forestry)

Post-2007 ECFP grantees may have their grants reduced if they opt to join the ETS (Forestry). In contrast, grantees can participate in the PFSI with no reduction in their ECFP grants. The different policy positions are based on the notion that the ability to earn income from timber under the PFSI is constrained, thus there is no over-incentivising of landowners to afforest.

The policy conflicts with the principle of separate payments for separate services. ECFP grantees joining the ETS (Forestry) are likely to become more frequent and could significantly lift the performance of the ECFP.

Funding allocations

Forestry, reversion and pole planting receive part of their grants at the time of establishment, and part three to eight years later. For forestry with two mandatory thinning requirements, grants will not be able to be approved after 2012 because funding is not available beyond 2020 to complete the thinning. The problem is similar, but not so pressing, for reversion and pole planting.

Alignment of payment schedules

For forestry 70 percent of the approved grant is paid following establishment and 30 percent after thinning, while pole planting receives 80 percent after establishment and 20 percent three years later. Administration would be simplified if the payment percentages were aligned.

Expense transfer

Like the AGS, some projects are not completed in the approved year and an expense transfer is required for which there is no certainty. A financial mechanism is required to address this situation.

Certification of claims

Claims for payments must be signed by the applicant's auditor or accountant. Often they have no involvement with the project or knowledge of the expenditure. Under the AGS claims are signed by the grantee.

Manuka/kanuka

There is potential to generate commercial returns by establishing forests on land with manuka/kanuka vegetation. This land is currently ineligible for ECFP grants.

Research has recognised that manuka/kanuka can substantially mitigate soil erosion 10 to 15 years after establishment. It therefore fulfils a role that is consistent with the goal of the ECFP.

Restrictive forestry regimes

Prescribed regimes cover radiata pine, Douglas fir and closed spaced poplars. Other species can be considered on a case by case basis. There may be potential for a cheaper radiata pine regime based on a lower initial stocking and one thinning, rather than two.

Applications a year before planting

Applications for grants must be submitted a year before planting. This prevents consideration of projects that have not met the deadline, but could have proceeded within the year if grant funding was still available.

Future roles

The policy supporting the ECFP, its goal and its continuation, are outside the scope of this review. A number of operational improvements can be made to the ECFP as identified below.

Recommendations

The Review Panel recommends:

1. Replacing the requirement for covenants with agreements similar to those used for the AGS.
2. Abolishing the policy that post-2007 grantees may have their grants reduced if they join the ETS (Forestry);
3. Providing funding to 2028 to cover the thinning costs associated with new planting from 2013 to 2020, to 2025 to cover payments for forest reversion initiated between 2016 and 2020, and to 2023 for pole planting undertaken between 2018 and 2020;
4. Aligning the schedule of payments for forestry and pole planting so both receive 70 percent of the approved grant following completion of successful establishment, and the subsequent 30 percent for forests up to year eight for thinning and for poles in the third year after establishment;
5. Enabling the grantees to certify claims for payments;
6. Introducing multi-year funding to overcome the expense transfer problem;
7. Reviewing the radiata pine regime with the possibility of including a cheaper, lower stocking and one thinning alternative, and considering whether any additional species and regimes may be appropriately included;
8. Introducing a mechanism for considering late applications for planting that would proceed that year and utilise unallocated funding;
9. Recording and monitoring the costs of administration of the ECFP, and evaluating these against the administration costs of the AGS.

Sustainable Land Management (Hill Country Erosion) Programme

The HCEP is focused on the mitigation of soil erosion on the hill country of the mid and lower North Island through change in land management. It has been operational since 2007/08. Farm plans are a key component of the HCEP, which operates as a partnership among central Government, four regional councils and associated landowners.

Achievements

In the absence of Government stated goals and/or objectives, and with three of the four regional councils having completed only one year of eight year programmes, observations about achievements are more appropriate than conclusions.

Target numbers of plans have mostly been accomplished, but success depends on plan implementation.

The bulk of the HCEP funding (\$13.4 million) has been to Horizons Regional Council. For the four years to 2009/10 their target for non-retirement land work to be completed was 5560 hectares, with 1386 hectares achieved. For the completion of retirement land work, the target was 4760 hectares with 3218 hectares achieved.

The Horizons Regional Council HCEP funded work was the subject of a detailed review that reported in April 2010². The recommendations of that review are commended.

Greater Wellington, Hawke's Bay and Taranaki Regional Councils have received a total of \$2.2 million. There is only one complete year of operational data. With an initial focus on the development of plans, implementation targets for land retirement, afforestation and pole planting have been modest, ranging from around 40 to 150 hectares. Generally these targets have been achieved, and sometimes exceeded.

The Willow and Poplar Research Collective was allocated \$653,000 to support a willow and poplar breeding programme. Business and research plans have been prepared, field trials undertaken, experimental hybrid poplars have been bred and distributed for assessment, presentations undertaken and articles published.

Costs

The HCEP is MAF base-line funded with \$2.4 million allocated per year, of which \$2.2 million are available for partnership funding of regional council initiatives and \$200,000 are available for catchment facilitation groups.

MAF administration costs are additional, but actual costs are not available. There are 1.4 FTEs budgeted for administration in 2010/11.

Regional councils are mostly contributing a similar amount to the Crown funding for their soil erosion projects, and landowners also make significant contributions in cash or in kind.

² Brown, I; Dobbs, L; Ramsden, T., 2010. *Hill Country Erosion Fund Performance Validation Report – Horizons Regional Council Sustainable Land Use Initiative (SLUI)*, unpublished report prepared for MAF Policy, April 2010.

Implementation issues

Goals / objectives

No record of Government's agreed goals or objectives for the HCEP has been identified. Either the documentation is missing from MAF records, or no goals and/or objectives were formulated and agreed. Consequently, vital information is not available to guide the implementation of the HCEP and the expenditure of \$2.4 million per year of Crown funding.

Focus on the mid and lower North Island

Cabinet minutes viewed do not restrict coverage of the HCEP to the mid and lower North Island, but refer to land outside the Gisborne District.

Free farm plans and voluntary implementation

Farm plans are a good product for facilitating and targeting land use change, but it is not appropriate for taxpayers and ratepayers to totally fund their development when landowners are under no obligation to implement any parts of the plans.

Roles of incentives and regulations in achieving land use change

The HCEP approach to addressing the mitigation of soil erosion has been referred to as "all carrot and no stick". This reflects ongoing policy tolerance of unsustainable land management by central and local governments. There is an important role for financial incentives paid for by taxpayers and ratepayers to encourage land use change, but they should be delivered in conjunction with an element of regulation through regional plans.

The AGS

Implementation of the afforestation component of farm plans is heavily reliant on the AGS. Funding for the AGS concludes in 2012/13. Without new Crown funding to extend the role of the regional pool of the AGS there will be a significant impact on the effectiveness of the HCEP. It is difficult to see the ETS (Forestry) covering this role in the short-term, at least.

Future roles

The partnership approach to the HCEP with central Government, regional government and landowners working together to address soil erosion is excellent. There is scope to integrate this with implementation strategies from the ECFP to form a national Soil Erosion Forestry Initiative.

Recommendations

In addition to the HCEP, the recommendations below refer to that part of option 3 for the AGS that concerns soil erosion (see page 44).

The Review Panel recommends:

At the national level -

1. Redeveloping the HCEP into a national soil erosion forestry initiative (see pages 64 to 66);
2. Providing new funding for soil conservation through afforestation, reversion and pole planting (essentially continuing the role of the current AGS regional pool);
3. Administering the regional pool and grant allocation panel;
4. Managing budgets and finance;
5. Contributing contestable funding for catchment facilitation and capacity building initiatives (a continuation of the current HCEP approach);

6. Encouraging regional councils to introduce regulations to operate alongside financial incentives;
7. Recording and monitoring the costs of administration.

At the regional level -

8. Continuing to prepare farm plans, but with a part charge to landowners;
9. Recruiting land for grants for afforestation, reversion and pole planting;
10. Ranking applications on the basis of soil conservation benefits;
11. Participating on the grant allocation panel;
12. Contributing contestable funding for catchment facilitation and capacity building initiatives (a continuation of the current HCEP approach);
13. Developing regulations to operate alongside incentives to address soil erosion and land use change (noting the example of the rules in the Gisborne Combined Regional Land and District Plan associated with Overlay 3A land).

Concluding Comment

The Review Panel is mindful of the fiscal pressures confronting the Government. However, continuation of the afforestation schemes along the lines recommended will be an important part of the Government's overall response to climate change, sustainable land management and the mitigation of soil erosion.

Afforestation Schemes Developed under Climate Change Policy

Permanent Forest Sink Initiative

The Permanent Forest Sink Initiative (PFSI) has a single purpose of enabling landowners to access the value of carbon sequestration. It does not involve Government grant funding and is not a time bound scheme, but has been in operation for only three years. The PFSI received strong support from most submitters who regard it as a world leading carbon sequestration scheme, driven by its focus on forest permanency through covenants and harvesting restrictions. The allocation of international units (Assigned Amount Units or AAUs) has facilitated the accessing of regulatory and voluntary carbon markets. These submitters focused on the need for Government commitment, and stability and continuity of policy for a relatively new scheme. In contrast, a smaller number of submitters regarded the PFSI as having limited value with the ETS (Forestry) now being available to landowners.

Cabinet agreed purpose of the PFSI

In October 2002 the Cabinet (CAB Min (02) 26/18) directed officials to report to the Cabinet Policy Committee by 31 March 2003 on details of a mechanism:

...in which landowners receive returns in proportion to the carbon sequestered in a regenerating forest where the landowner covenants that forest for permanent protection (non-harvest).

That mechanism was subsequently reported in POL Min (03) 10/6, and decisions taken on this paper by the Cabinet Policy Committee provided the framework for the PFSI, including that landowners entering agreements under the mechanism should bear all the liabilities, costs and risks associated with generating, claiming, monitoring and marketing forest sink credits.

Cabinet Policy Committee subsequently made a significant refinement to allow for a "...limited timber harvest under continuous canopy management after a minimum non-harvest period of 35 years" (POL Min (04) 9/7). The 35 year restriction was subsequently removed.

The purpose of the PFSI can also be said to be stated in the title and the purpose of Part 3B of the Forests Act 1949 (under which the PFSI is administered). These refer to providing a:

...mechanism to allow landowners to access the value of carbon sequestered on land through the establishment of forest sink covenants.

MAF reports refer to net environmental benefit from the PFSI in terms of enhanced biodiversity, reduced soil erosion, improved water quality and some reduced agricultural emissions. These benefits were referred to in papers to Cabinet on the development of the PFSI, but references to such matters are not apparent in the Cabinet decisions referred to above. They might be considered informal co-benefits of the PFSI, but are not part of Government's stated purpose for the PFSI.

Achievements with respect to purpose

The PFSI has only been operational since regulations under the Forests Act came into force on 1 December 2007. Already a number of submitters with significant interests in the PFSI regard it as

a world-leading carbon forestry scheme with the potential to set a “gold standard” among international schemes.

As of March 2011, 31 PFSI covenants covering 7141 hectares were registered. A further eight covenants had been approved, but not yet registered or withdrawn (see Table 1). In comparison there are:

- 199 033 hectares of post-1989 forests registered with the ETS (Forestry) under 1160 registrations (as at May 2011);
- 6419 hectares of new forests established under the AGS (2008 to 2010); and
- 12 000 hectares of new planting undertaken in total (2008 to 2010) by the forest industry (including the AGS planting).

Table 1: Number and area (hectares) of PFSI applications received, approved and registered by year (as at March 2011)

Year	Received		Approved		Registered	
	Number	Area	Number	Area	Number	Area
2007/08	1	477	1	477	0	0
2008/09	24	4 730	10	1 447	6	809
2009/10	20	5 243	14	3 431	13	4 086
2010/11	9	1 276	15	2 842	13	2 283
SUBTOTAL	54	11 726	40	8 197	32	7 178
Withdrawn	-11	-2 401	-3	-312	-1	-37
TOTAL	43	9 325	37	7 885	31	7 141

The number of applications per annum has declined since 2008/09, possibly due to the introduction of the ETS (Forestry). However, submissions to the Review Panel have referred to PFSI projects under consideration that cover significant areas of forest.

Of the 7141 hectares of forests under registered PFSI covenants, 4355 hectares are exotic forests (61 percent) and 2787 hectares are indigenous forests (39 percent).

The *Review of MAF Afforestation Schemes discussion document 2010*³, indicated that only 148 hectares of new forest had been established under the PFSI. The Review Panel understands that this figure relates to forests where the PFSI applications were lodged in the same year the forests were established. It consequently understates the total area of new forests as in many instances there has been a lag of a year or more between establishment and application. The Panel understand that there is in excess of 1000 hectares of what can appropriately be termed new forests either registered under the PFSI or with applications being processed. However, the Panel notes that establishment of new forests is not part of the Government’s stated purpose for the PFSI, and therefore is not a measure of failure or success.

The numbers and amounts of carbon unit requests and approvals have increased constantly since 2008, with a total of 246 793 AAUs having been approved for allocation by the end of 2010. Submitters have noted the greater marketability of AAUs under the PFSI compared to NZUs or NZUs converted to AAUs under the ETS (Forestry), and the actual or potential price premiums

³ Ministry of Agriculture and Forestry, 2010. *Review of MAF Afforestation Schemes discussion document 2010*, Ministry of Agriculture and Forestry, Wellington, December 2010.

for AAUs from PFSI forests. At \$20 per tonne of CO₂ the AAUs approved for allocation to date under the PFSI have a value of \$4.9 million.

Table 2: AAU Allocations under the PFSI by Year

Year	Requests Approved	Units Approved
2007/08	-	-
2008/09	5	6 583
2009/10	23	84 652
2010/11	29	155 558
Totals	57	246 793

There is no practicable way of measuring the value of co-benefits from the PFSI, other than noting the area of registered forest covenants and the split between exotic and indigenous forest.

In summary, the PFSI has provided a small-scale, niche mechanism built around permanency of forests that is regarded as having less uncertainty than the ETS (Forestry), and has enabled landowners to access regulatory and voluntary markets for carbon. The mechanism is being delivered at minimal cost to the Crown.

Financial costs to the Crown in delivering the scheme

Section 67ZH of the Forests Act requires the Minister to take all reasonable steps to ensure that the direct and indirect costs of administering the PFSI that are not provided for by money appropriated by Parliament are recovered by way of fees, levies or otherwise.

Certain direct costs are recovered, reflecting a desire for consistency with the ETS (Forestry) where direct costs of administration are also recovered. Regulation 4 of the Forests (Permanent Forest Sink) Regulations 2007 provides that fees and charges must be paid by PFSI applicants in accordance with a Schedule within the Regulations. The Schedule describes the various direct costs related to processing PFSI application. An application fee of \$500 is payable for the first 4 hours of work, with \$150 per hour thereafter.

Some process development costs are shared among or between forestry schemes. For example, the ETS (Forestry), PFSI and AGS share the same methodology and guides for assessing land eligibility, and the ETS (Forestry) Climate Change Information System (CCIS) has been modified so that it can be used to implement the Field Measurement Approach for the PFSI.

The Review Panel has been advised by MAF that funding for the PFSI is provided under Output 4.2 of the 2010/11 MAF Output Plan: Vote Agriculture and Forestry. This funding covers both indirect costs and those direct costs not recovered through fees and charges.

MAF does not have in place a time recording system that enables provision of activity or project based cost estimates. MAF has provided derived administration costs for the PFSI based on an estimate of the number of dedicated full time equivalent staff (FTEs) and proportioning total corporate overheads. These are provided in Table 3.

Table 3: Derived PFSI administration costs (excluding GST)

Year	Dedicated FTEs	Total direct administration costs	Corporate overheads	Total Scheme Admin Cost
2007/08	1.3	\$168,000	\$19,000	\$187,000
2008/09	1.5	\$190,000	\$21,000	\$211,000
2009/10	1.7	\$210,000	\$23,000	\$233,000
2010/11	2.0	\$238,000	\$27,000	\$265,000
Totals		\$806,000	\$90,000	\$896,000

The resources and costs required to administer the PFSI are low compared to the other afforestation schemes considered in this review. Table 4 breaks down the direct costs to a per hectare basis.

Table 4: Derived direct administration costs per hectare (excluding GST)

Year	Hectares approved	Total direct administration costs	Administration costs per hectare
2007/08	477	\$168,000	\$375
2008/09	1 447	\$190,000	\$131
2009/10	3 431	\$210,000	\$61
2010/11	2 842	\$238,000	\$84

It is to be expected that administration costs per hectare in the first year will be higher than those in following years when systems become more streamlined.

For the period between 2008/09 and 2010/11 there were 42 applications received and not withdrawn, and the total direct administration costs were estimated to be \$638,000. Application fees (at \$500 per application excluding GST) recovered only \$21,000 (3 percent), leaving a residual of \$617,000. MAF advised that while a number of hourly charges have been levied precise figures are unknown, but the amounts are understood to be very small in total.

Accordingly, at current application rates and fee levels the net cost to the Crown of administering the PFSI has been approximately \$874,000. (Total administration costs of \$895,000 less \$21,000 application fee income). This cost has been met from MAF Output Plan: Vote Agriculture and Forestry.

Over time, the policy on cost recovery for the PFSI appears to have moved from recovering all costs from landowners, to recovering direct costs (like the ETS (Forestry)), to recovering a very small percentage of costs.

Financial, environmental and social costs and benefits to the Crown, local authorities and participating landowners

Table 5: Financial, environmental and social costs and benefits

	Financial	Environmental	Social
Crown	<ul style="list-style-type: none"> • Funds indirect costs of administration • Funds direct costs of administration not recovered from fees • No direct financial returns 	<ul style="list-style-type: none"> • Carbon sequestration and mitigation of climate change • Carbon credits available within NZ • Gains in biodiversity, water, soil and carbon values 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes
Local authorities	<ul style="list-style-type: none"> • No costs • No direct financial returns 	<ul style="list-style-type: none"> • Gains in biodiversity, water, soil and carbon values 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes
Landowners	<ul style="list-style-type: none"> • Pay costs of preparing applications • Pay some direct costs of MAF's processing of applications • Receive AAUs 	<ul style="list-style-type: none"> • Gains in biodiversity, water, soil and carbon values 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes

Costs and Benefits to Local Communities

There are no apparent costs to local communities. In the future there will be downstream benefits from the mitigation of soil erosion, improvement of water quality and enhancement of biodiversity. The extent of these will vary from site to site.

Implementation: costs, issues and opportunities

Costs and key issues that have been raised through submissions and consultation meetings, and by the Review Panel, are considered below. Many other issues have also been raised and those of potential significance are listed at the end of this section of the report. The Panel invites MAF to consider these other issues as part of their processes of ongoing policy development and implementation of the PFSI.

Costs

The PFSI is a small-scale forestry scheme with annual costs resulting from administration only (see above). It differs from the other forestry schemes in that no grants are involved.

For participating landowners, the main costs arise from the preparation of the applications and the charges incurred through MAF's application and processing fees. No submissions commented on charges, so from the participants' points of view cost does not appear to be an issue.

PFSI v ETS (Forestry)

Submitters who are involved in the PFSI through the marketing of AAUs, promotion of the scheme or facilitation of landowners to join the scheme, are strongly of the view that it should run

alongside, but be independent of, the ETS (Forestry), which is seen by some to be a “political football”. The reasons given in their submissions are:

- The PFSI is highly regarded internationally as a forest offset scheme where permanence, security and credibility are enforced by a permanent covenant backed by Government regulation;
- It operates under a contractual rather than legislative basis, and is seen to be more resilient;
- Its independence from the ETS (Forestry) gives it an advantage of stability as the ETS is more likely to be subject to change;
- It provides the opportunity to access a range of voluntary and compliance markets for carbon due to permanency, additionality, and standards;
- The scheme can generate units (AAUs currently) for compliance or voluntary markets that have a “green quality” and greater market acceptance than NZUs and NZUs converted to AAUs, whereas ETS units (NZUs and NZUs converted to AAUs) may get caught up in the “hot air” debate around the billions of units that resulted from de-industrialisation in Eastern European countries following the fall of communism;
- It suits non-harvest forestry projects, especially reverting indigenous forests;
- It is consistent with the Kyoto Protocol activities of "afforestation" and “reforestation” which are activities that result in land becoming forest land. There is no restriction on how long it takes for land subject to these activities to reach the definition of forest, provided the activity is present. The activity may start before trees are present (e.g., fencing land to exclude livestock). It does not particularly matter that forest is either not present or forest establishment is slow. In contrast, in the ETS (Forestry) the activity is "owning post-1989 forest land or holding a registered forestry lease or forestry right over post-1989 forest land" where the land must be forest land to qualify.
- It suits progressively regenerating indigenous forest in New Zealand (non-forest land that is intended to be afforested can participate);
- It has yet to achieve its potential as traders are just coming to terms with the opportunities it provides.

Some of these matters may be about submitters’ perceptions rather than realities e.g. the uncertainty about a future international agreement may be just as likely to result in change to the PFSI as the ETS (Forestry), and it is questionable whether the contractual nature of the PFSI makes it less subject to modification than the ETS (Forestry). However, perceptions influence decisions and actions in the carbon market, and by investors in PFSI forests.

Moving the PFSI into the Climate Change Response Act 2002 would also be a reasonably complicated policy and legislative exercise, not least in relation to existing forest sink covenants and how they should be treated. Such action is hard to justify when:

- The operational issues identified in this review (see Table 6) can be addressed through the Forests (Permanent Forest Sink) Regulations 2007, or the forest sink covenants; and
- An international climate change agreement operating post-2012, or lack of such agreement, may result in changes to the PFSI, so embarking on such an exercise at this time could be considered precipitous.

Over the short-term at least, the Review Panel considers that the PFSI and the ETS (Forestry) should continue to be administered under separate legislation. In the longer-term there is logic in having the two carbon forestry schemes administered under the same legislation and ensuring consistency in common processes, definitions and criteria.

Covenant

The registered covenant is the mechanism that imposes forest permanency, which is important for purchasers of PFSI carbon credits and regarded by many submitters as the heart of the scheme. Coupled with the restrictions on harvesting, these make the PFSI fundamentally different to the ETS (Forestry), and more highly valued by international markets.

A covenant on Maori land constitutes land alienation under the Te Ture Whenua Maori Act 1993. The major issue with the PFSI covenant on Maori land is the minimum termination period of 50 years. The Review Panel has been advised by submitters that the Maori Land Court is unlikely to approve land alienation of this duration, but may well approve alienation under a covenant of 25 years. The dilemma is that if the termination period for the covenant was reduced from 50 to (say) 25 years, the concept of forest permanency could be severely weakened (forests could be cleared after 25 years depending on rules in district plans, although carbon liabilities would result), and the principle attraction of the PFSI would be lost. This situation is unfortunate as there is multiply-owned Maori land that is well suited to the PFSI.

There are several options in response to this issue:

1. The PFSI should be further strengthened by prohibiting any harvest. This makes the distinction between the PFSI and the ETS (Forestry) simpler to explain to potential growers or to buyers of the carbon and will bolster the units as being of a “gold standard”. Those who wish to combine harvest with carbon sequestration can do so under the ETS (Forestry) – an option that was not available when the PFSI was instigated. The Panel rejects the concept of restricting the PFSI to indigenous vegetation only, as exotic trees can be an effective way of stimulating indigenous regeneration.

Given that the environmental integrity of the PFSI is bolstered by the no-harvesting rule, the covenant period can be reduced to 25 years without excessive loss of credibility. This would allow Maori landowners to participate, as the Maori Land Court is reluctant to approve covenants on land titles that run for more than 25 years.

2. The PFSI rules regarding harvest should be retained, but a special provision be included to reduce the covenant period for Maori land from 50 to 25 years. International acceptance of the rights of indigenous peoples should ensure that the scheme maintains its market premium.
3. The existing rules on the 50-year covenant period and the 99-year harvesting restrictions should be retained to support the concept of permanency, because too many amendments can reduce the scheme’s credibility for little gain and a significant percentage of participants favour a harvesting provision. Maori landowners do have the option of registering under the ETS (Forestry) where no covenant is required.

All options have their strengths and weaknesses. On balance the Review Panel prefers option 3 (status-quo).

Advice from the Maori Land Court should be sought before adopting any option that reduces the covenant termination period. The Panel also supports the proposed MAF dialogue with the Maori Land Court to establish a clearer basis for adopting PFSI covenants under Trust orders.

Eligibility of regenerating indigenous forest

Submissions have raised two issues about the determination of eligibility of regenerating indigenous forest. Eligible land requires that there be a change from non-forest to forest since

31 December 1989. The definition of forest requires tree crown cover of more than 30 percent, with trees having the potential to reach a minimum height of five metres at maturity in situ.

The first eligibility issue raised is that for regenerating indigenous forest it is not appropriate to apply the requirements of the forest definition on a hectare by hectare basis due to the inherently high level of variability. (Plantation forests are relatively uniform). An alternative, to the extent permitted by current or future international rules, is to consider large blocks as single management units on the basis that forest can be attained across the management unit over a period of time.

An associated eligibility issue for regenerating indigenous forest is that rather than focusing on imprecise analysis of aerial imagery to determine what vegetation is (or is not) present (young seedlings can not be detected), and the age of that vegetation, the emphasis should be on the timing of human activities to bring about land use change (for example, destocking, fencing off from other land). Each of the single management units referred to above would require a consistent date of land use change across the whole unit.

The Review Panel has some sympathies with these issues and the suggested alternative approaches, particularly given the potential for the PFSI to facilitate extensive areas of indigenous forest regeneration. The Panel suggests that MAF considers the adoption of the alternative approaches.

Carbon assessment

Issues have been raised about the credibility of carbon look up tables that must be used for forest areas of less than 100 hectares, and that have been used prior to the Field Measurement Approach.

With respect to radiata pine, the small-scale plantings are commonly on sites that are more fertile than the larger-scale sites from which inventory data have been used to develop the look up tables. In other words, the tables are conservative and on average the forest owner is losing out on carbon credits.

Submissions suggest that the opposite situation applies to indigenous forests i.e. the look up table is over optimistic in allocating credits to the forest owner. While this may appear favourable to the forest owners, if they switch from the look up table to the Field Measurement Approach they are likely to incur a liability. Also, if there is a loss of biomass, for example from fire or disease, the landowner's liability will be over stated.

The Review Panel notes that Government's purpose for the PFSI is for landowners to receive returns in proportion to the carbon sequestered in a forest. This implies a reasonable degree of accuracy in any assessment and allocation methodologies.

The credibility of tables is also important from the point of view of the market perception of the PFSI and the carbon units it generates.

The Review Panel emphasises the importance of the credibility of look up tables for these reasons. The Panel understands that MAF is already working with Landcare Research to revise the indigenous forest look up table, and suggests that it may want to consider the reliability of the radiata pine tables.

Risks and insurance

Participation in the PFSI has been low. This is partly due to the perceived risks identified in submissions around loss of biomass and associated liabilities.

Whereas insurance cover for fire is adequately provided by the private sector at reasonable cost, the same is not true for wind (restricted coverage), disease or potential fluctuations in carbon price.

Insurance against loss of carbon stocks has become available in 2011. This covers fire, lightning, aircraft, hail strike, windthrow and costs associated with re-establishment⁴. However, the premium terms for this new type of insurance are not known.

Depending on how commercial insurance evolves, a Government-supported or facilitated self insurance scheme could also be investigated to mitigate the perception of the risk and enhance uptake of the PFSI. The Government could either withhold some carbon credits from individual participants or could facilitate the development of a scheme administered by the participants.

Harvesting

The PFSI enables harvesting under continuous canopy forest management. To date no such harvesting has been undertaken as the PFSI forests are immature. Most submissions have indicated support for the harvesting provision, while some suggest that it weakens the international perception of forest permanency.

The Review Panel believes the harvesting provisions should remain as they currently stand.

Disjunction between the 50-year covenant and the 99-year harvesting restriction

Covenants can be terminated at any time after they have been registered for 50 years, but this does not mean that they will be terminated. In this context there is a disjunction with the 99-year harvesting provision, but the Review Panel does not consider this to be a significant issue.

MAF processing times

Concerns have been raised regarding MAF processing times for PFSI applications, particularly where they involve regenerating indigenous forests.

MAF has recognised that administration timeframes need to be shortened and has recently developed service performance measures. An increased focus on human activities to facilitate land use change (to indigenous forest) may mitigate the issue with respect to regenerating indigenous forests.

Alignment with other schemes (duplication, omission, misalignment)

The PFSI and AGS (particularly the public pool) both focus on carbon sequestration, but complement each other through different mechanisms to fund forest establishment (carbon credits versus grants) and a focus on forest permanency compared to management flexibility after ten years. The PFSI is also well suited to indigenous forest reversion, whereas the AGS is not.

There are no significant duplications, omissions or misalignments among the PFSI and the other schemes. Appendix One provides more detail on comparisons among the schemes.

Cost effectiveness

It is premature to draw definitive conclusions on the success and cost effectiveness of a mechanism that introduced a land/forest management system that is fundamentally different (management for carbon) to traditional management systems. Forest management is a

⁴ Information is available at www.if.net.au

conservative business. Three complete years of operational data are inadequate for authoritative assessment of the success and cost efficiency of the PFSI.

The single purpose of the PFSI is providing a mechanism to enable landowners to access the value of carbon sequestration. The annual area covered by registered covenants and AAU allocations are provided in Tables 1 and 2.

Given the purpose for the PFSI, the allocation of AAUs is a principle criterion for assessing the success of the scheme. AAUs approved for allocation have increased constantly over the three years of operation to reach 155 558 units in 2010/11, and a total of 246 793 units over the three years of operation. While the numbers are not large, they indicate that the scheme is building momentum.

In the context of about 12 000 hectares of new planting by the traditional forest industry during the life of the PFSI (half of which was under AGS grants), the registration of covenants covering 7178 hectares suggests reasonable success for the PFSI. However, the area is small compared to the 199 033 hectares of post-1989 forest registered under the ETS (Forestry).

With no grant involved these covenanted forest areas should be achieved at low cost to the Crown. The lack of data on actual administration costs and costs recovered mean the actual cost to the Crown cannot be quantified.

There have been criticisms of the PFSI with regard to the modest area of new forests that have been established. However, establishment of new forest is not part of Government's stated purpose for the PFSI, so it is wrong to use this as a measure of failure or success.

A paper of 2 May 2003 to the Cabinet Policy Committee noted that the PFSI is not specifically designed to generate environmental benefits, but the mechanism will result in positive environmental outcomes in terms of biodiversity, soil and water conservation, and reducing agricultural emissions through displacing pastoral agriculture. Cabinet consequently did not include co-benefits in the decisions it made with respect to the purpose of the PFSI, and the Review Panel accordingly has made no attempt to assess co-benefits.

There are a number of important components to the original framework of the PFSI that Cabinet did agree to, including that landowners entering agreements under the mechanism should bear all the liabilities, costs and risks associated with generating, claiming, monitoring and marketing forest sink credits. This policy appears to have changed dramatically over the intervening years with the bulk of the administrative costs being paid by the Crown.

There has been no harvesting of PFSI forests due to their immaturity. The continuous canopy harvesting provision thus remains untested.

Future Roles (continuation, merging, abandoning)

Government's motivations for the PFSI (carbon sequestration, mitigation of climate change, meeting Kyoto Protocol commitments), and its stated purpose for the PFSI (enabling landowners to access the value of carbon), remain valid.

Over the short-term at least, the Review Panel considers that the PFSI and the ETS (Forestry) should be administered under separate legislation. (See discussion above under PFSI v ETS (Forestry)). Even if the PFSI was merged into the ETS (Forestry), separate legislation may still need to be retained for existing covenant holders if they did not want to change.

Looking to the future, the major issues are around the forest permanency provisions afforded by the 50-year covenant and the harvesting provisions. Permanency is at the heart of this PFSI. At this time the Review Panel believes that there should be no change to the current covenant and harvesting provisions. (See discussion above under Covenant).

The Review Panel understands that it is highly likely that there will be a regulatory gap between current phase of the Kyoto Protocol and any subsequent climate change deal among countries. If that is the case, then the protocols and definitions for forest land and carbon measurement could be customised for the New Zealand situation, rather than following the UN Framework Convention on Climate Change.

There are several areas where the PFSI could be improved by adopting features of the ETS (Forestry). While none of these are urgent, they could be implemented through amendments to the PFSI Regulations. Other amendments to the PFSI Regulations are desirable for consistency and alignment with the ETS (Forestry), although full integration with the Climate Change Information System (CCIS, the ETS information system) is not necessary at this stage given the low number of PFSI covenants. (Note that CCIS integration with regard to the Field Measurement Approach is already in place).

Possible administrative improvements and suggested actions are outlined in Table 6.

Table 6: Improvements to PFSI administration

Issue	Solution
No standard for mapping eligible forest	Amend the PFSI Regulations
No automated system for recording unit issues and surrenders	Continue with the spreadsheet method, or add extra functionality to the Climate Change Information System software
No provision for on-line registration	Add extra functionality to the Climate Change Information System software
No provision for multiple Carbon Accounting Areas for carbon stock changes as in ETS (Forestry)	Amendment probably not necessary
No provision for final emission returns when land subject to a covenant is transferred	Amend the PFSI Regulations
No provision for emissions rulings or appeal of Chief Executive's decisions	Amend the PFSI Regulations
No provision for declarations of compliance with the RMA, Forests Act or regional pest management strategies	Amend the PFSI Regulations
No rights of prospective purchasers to information on emission returns or unit balances	Amend the PFSI Regulations
Different scales of fees and charges compared to the ETS (Forestry)	Amend the PFSI Regulations

Other Issues from Submissions

The magnitude of this review, which covers four forestry schemes, has been such that the Review Panel has not been able to address all the issues that have been raised. Such issues that relate to the PFSI and the Review Panel deem potentially relevant are listed below:

- Should the harvesting restriction apply to the whole sink area rather than each hectare?

- Recognition that access beyond 2012 to AAUs is uncertain, but that ongoing access to international units has significant advantages (although NZUs may be okay if they can be tracked back to the project).
- Government could guarantee a minimum carbon price, or set a floor price for a certain quantity of carbon from a project, which would transfer the risk of start-up investments to the Crown and encourage participation.
- The portion of land purchase price attributable to standing timber can only be deducted against proceeds from harvesting, but a PFSI forest may never be harvested and can earn taxable income from carbon immediately.
- There is a taxation anomaly where no deductions are permitted for contingent or potential liabilities arising from the sale of carbon sinks which could be addressed by an accrual assessment allowing for the future cost of replacement, adjusted annually to reflect the potential liability arising.
- Under current rules anyone switching from the ETS (Forestry) to the PFSI must repay all issued NZUs which can pose a significant obstacle (if the NZUs have been sold and there is a lag in earning AAUs).
- Better promotion of the fact that riparian strips alongside a stream qualify for the PFSI if the stream width (or gap between the two riparian strips) is less than 15 metres.
- Administration is too conservative regarding scrub land eligibility and more flexibility would not encounter international opposition.
- There is a lack of any one visible MAF person leading and championing the PFSI, and a lack of strong promotion and publicity of the PFSI compared to other schemes.
- There is a lack of MAF team skills with respect to understanding the intricacies of indigenous forest regeneration, and centralising processing (rather than regionalising) could assist develop these skills.

Recommendations

The Review Panel recommends:

1. Continuing the PSFI;
2. Maintaining separate legislation for the PSFI and the ETS (Forestry) until the post-2012 situation becomes apparent;
3. Maintaining the current covenant and harvesting option;
4. Engaging in dialogue with the Maori Land Court to establish a clearer basis for adopting PFSI covenants under Trust orders;
5. Introducing eligibility criteria for regenerating indigenous forests that operate on a management unit basis and focus on human activities to achieve land use change;
6. Progressing work with Landcare Research to revise the indigenous lookup table, and considering the reliability of the radiata pine tables;
7. Investigating a self-insurance scheme with either the Government withholding some carbon credits from individual participants or facilitating the development of a scheme administered by the participants;
8. Addressing the administrative improvements identified in Table 6 (page 29);

9. Recording and monitoring the actual costs of administration.

Afforestation Grant Scheme

The Afforestation Grant Scheme (AGS) has both carbon sequestration and sustainable land use objectives. It is time bound by the fact that it has five (originally six) years of Government grant funding, due to conclude in 2012/13. The AGS received widespread support through submissions as a mechanism that alleviates cash flow problems for small-scale landowners (including farmers) who seek to move to carbon forestry and/or change land use to address soil erosion. The regional pool has close linkages with the HCEP, being the primary mechanism to implement land use change (afforestation) under that scheme. The popularity of the AGS is indicated by the public and regional grant pools having been considerably over-subscribed in recent years, but most submissions have questioned the value of the low carbon sequestration category.

Cabinet agreed objectives

In 2007 Cabinet agreed (CBC Min (07) 19/3) to implement an AGS with the objectives of:

- Providing an alternative mechanism with lower transaction costs for participants that allows landowners to recognise the climate change mitigation benefits of afforestation;
- Establishing new Kyoto-compliant forest in areas that will assist with reducing the expected impacts of climate change and generate other environmental benefits;
- Creating additional Kyoto sink credits at least cost to the Crown.

The reference in the first objective to lower transaction costs is understood to mean lower than the ETS (Forestry)(see supporting paper to Cabinet Committee), which has obligations such as the ongoing requirement for assessing carbon stock change and filing returns. The second objective is understood to include the mitigation of effects on the land (soil erosion, water runoff) from more frequent storm events expected to occur as a result of climate change.

MAF publication *A guide to the Afforestation Grant Scheme*⁵ refers to the primary objective of encouraging the establishment of new forests to stabilise the greenhouse gas concentration in the atmosphere, with priority given to proposals that reduce soil erosion, improve water quality and indigenous biodiversity, and achieve the primary objective and other environmental outcomes at least risk and cost to the Crown.

Cabinet authorised the Ministers of Finance, Agriculture and Forestry, Maori Affairs and the Minister Responsible for Climate Change Issues to approve the final design details of the scheme. These final design details were contained in the AGS Guidelines which were approved by the Ministers in January 2008.

Achievements in relation to objectives

Implementation of the AGS commenced in the 2008/09 year with funding split between a public pool using a tendered grant system and a regional pool using a fixed grant. The number of applications, number of applications approved, approved areas and grant rates for the two pools are provided in Table 7.

⁵ Ministry of Agriculture and Forestry, 2010. *A Guide to the Afforestation Grant Scheme*, Ministry of Agriculture and Forestry, Wellington, October 2010.

Table 7: Applications received, approved, grant areas and grant rates by funding pool (as at November 2010)

Afforestation Grant Scheme	Public Pool				Totals
	2008 actual	2009 actual	2010 estimate	2011 in process	
Planting Year					
High sequestration rate category					
Number of applications received	6	79	31	79	195
Number of applications approved	5	43	24	28	100
Grant area approved (hectares)	93	1 232	1 431	1 833	4 589
Average grant rate/hectare	\$1,542	\$1,942	\$2,021	\$1,681	\$1,797
Low sequestration rate category					
Number of applications received	2	17	3	7	29
Number of applications approved	0	5	0	1	6
Grant area approved (hectares)	0	577	0	52	629
Average grant rate/hectare	0	\$650	0	\$675	\$662
Total area approved (hectares)	93	1 809	1 431	1 885	5 218
Total finance approved	\$155,658	\$2,753,000	\$2,906,283	\$2,898,502	\$8,713,443

Afforestation Grant Scheme	Regional Pool				Totals
	2008 actual	2009 actual	2010 estimate	2011 in process	
Planting Year					
High sequestration rate category					
Number of applications received	5	48	48	42	143
Number of applications approved	5	45	47	27	124
Grant area approved (hectares)	353	1 027	1 730	1 137	4 247
Average Grant rate/hectare	\$2,400	\$2,397	\$2,150	\$2,176	\$2,281
Low sequestration rate category					
Number of applications received	0	3	13	3	19
Number of applications approved	0	1	10	2	13
Grant area approved (hectares)	0	23	178	18.8	220
Average Grant rate/hectare	0	\$1,000	\$900	\$981	\$960
Total area approved (hectares)	353	1 045	1 908	1 156	4 462
Total finance approved	\$848,640	\$2,458,278	\$3,712,257	\$2,498,408	\$9,517,583

Table 8: Approved areas versus planted areas (hectares) by year for public and regional pools combined

Year	2008	2009	2010*
Approved areas	446	2 854	3 339
Actual areas planted	446	2 833	3 140

* provisional

MAF has advised that grants for a further 2814 hectares have been estimated for 2012 (the last year of current funding), bringing the total area of actually planted, or assumed to be planted, forest to 12 274 hectares over the period 2008 to 2012. The three most prominent species that have been planted are:

- radiata pine 6733 hectares
- Douglas fir 2258 hectares
- coastal redwood 953 hectares.

Approximately 3000 hectares per year across the two pools have been established, or will be established, from 2009 to 2011 at average grant rates of \$1,700 for the public tender pool and \$2,100 for the regional fixed grant pool.

The regional pool has had a strong focus on the mitigation of soil erosion which may account for the higher grant rate (higher costs of forest establishment). About 46 percent of the area established has been on land use capability class 7e land, compared to 26 percent for the public pool. The focus on soil erosion is consistent with the Government's originally stated objectives for the AGS, but does raise questions if the priority is carbon sequestration (see discussion below under Implementation: costs, issues, opportunities, and on Government's objectives).

Grants have been targeted towards land where afforestation brings environmental co-benefits i.e. soil conservation, improved water quality and improved biodiversity. Table 9 shows the co-benefit scoring for the public pool. In the regional pool, all applications must achieve a minimum co-benefit score.

Table 9: Number of public pool approved applications awarded a co-benefit score by tender round

	Tender round	Received	Approved	Co-Benefit Type		
				Soil Conservation	Water Conservation	Biodiversity Improvement
High	1	10	9	3	1	0
	2	23	15	3	1	0
	3	59	42	7	37	0
	4	79	15	6	12	0
	SUBTOTAL	171	81	19	51	0
Low	1	2				
	2	17				
	3	15	5	3	2	5
	4	7	1	1		1
	SUBTOTAL	41	6	4	2	6
TOTAL	212	87	23	53	6	
% TOTAL	100	41¹	26²	61²	7²	

Notes:

1. Approved applications as a percentage of total applications received.
2. Co-benefit type as a percentage of total approved applications.

Using post-1989 carbon look up tables, MAF has estimated that the forests planted, and to be planted, under the AGS will sequester 1 610 965 tonnes of CO₂ over the ten-year agreement periods. The associated carbon credits accrue to the Crown.

Financial Costs to the Crown in delivering the Scheme

The AGS was originally established with approved grant funding for six years (2008/09 to 2013/14). It has subsequently been subject to two rounds of Government expenditure reviews which have significantly reduced the annual funding and reduced the funding duration by one year. Annual budgeted funding and actual funding allocated to grants are identified in Table 10.

Table 10: Funding for, and allocation of, AGS grants (\$ million excluding GST)

Year	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Funding approved in 2007	5.0	9.7	10.7	10.0	10.0	5.0
Funding post-2008/09 value for money review	5.0	6.7	7.7	7.0	7.0	2.0
Funding post-2009/10 reprioritisation	5.0	6.7	7.7	5.0	5.0	0
Funding allocated to grants	1.0	5.2	5.5	6.8	5.0	0

The total cost to the Crown is the funding allocated to grants (Table 10) plus the costs of administering the AGS by MAF. Administration costs for 2009/10 and 2010/11 are provided in Table 11. For the public pool these are derived costs provided by MAF based on dedicated full time equivalent staff, rather than actual costs.

Table 11: Administration costs for the AGS

Year	2009/10	2010/11 (anticipated)
Public pool (derived)	\$343,000	\$473,000
Regional pool	\$184,000	\$289,000
Total	\$527,000	\$762,000

MAF reimbursed regional councils \$94,166 of their \$184,000 of administration costs in 2009/10 for the regional pool. (Data are not available for 2010/11). This was mostly comprised of payments by MAF of \$5,200 per approved grant, plus a \$30,000 annual fee.

The number of grants on which payments will be paid has been capped at 50 for 2010/11, 39 for 2011/12, and 29 for 2012/13. The exact fee paid for these years will depend on the number of grants approved.

While the public pool administration costs are higher than those for the regional pool there are two important mitigating factors:

- Regional costs are arbitrary and based on a fixed amount per successful application;
- Public pool costs include business support functions such as legal advice, information and financial management which benefit the regional pool.

Financial, environmental and social costs and benefits to the Crown, local authorities and participating landowners

Table 12: Financial, environmental and social costs and benefits

	Financial	Environmental	Social
Crown	<ul style="list-style-type: none"> • Sink credits at less than market price where radiata pine planted, but above market price where slower growing species are established • Set up costs • Costs of grants and administration 	<ul style="list-style-type: none"> • Carbon sequestration and mitigation of climate change • Carbon credits available within NZ • Gains in biodiversity, water, soil and carbon values 	<ul style="list-style-type: none"> • Supports more robust/resilient communities
Local authorities	<ul style="list-style-type: none"> • Financial support for implementation of soil conservation and water quality plans • Costs of administration partly recovered from the Crown 	<ul style="list-style-type: none"> • Gains in biodiversity, water, soil and carbon values 	<ul style="list-style-type: none"> • Supports more robust/resilient communities
Landowners	<ul style="list-style-type: none"> • Cost of application (may be higher (more complicated) for multiply-owned Maori land) • Provides initial cash flow for forestry projects, but payments are retrospective • Bridging finance may be required • Opportunity to earn carbon credits after 10 years 	<ul style="list-style-type: none"> • Enables optimal land use at a farm scale 	<ul style="list-style-type: none"> • Supports more robust/resilient communities

Costs and Benefits to Local Communities

There are no obvious costs of the AGS to local communities other than the ratepayer funding for that part of the regional pool administration that is not refunded by MAF. Some submissions have commented on the undesirability of blanket afforestation, but the extent of afforestation is limited to around 3000 hectares per year by the level of grant funding so the issue is hardly significant.

The current 300 hectare limit per grant application favours participation by small-scale operations (in a forestry context), including farmers.

In years to come there will be downstream benefits from the mitigation of soil erosion and improvement of water quality, but these are not readily quantifiable.

Implementation: costs, issues, opportunities

Costs and key issues that have been raised through submissions and consultation meetings, and by the Review Panel, are considered below. Other issues have also been raised and those of potential significance are listed at the end of this section of the report. The Panel invites MAF to consider these other issues as part of their processes for ongoing policy development and implementation of the AGS.

The discussion below addresses the AGS as it currently operates and the issues that have emerged. These lead into a significantly different mechanism that the Review Panel contends should operate post-2012/13. This is outlined in the section on Future roles.

Costs

MAF does not cost recover for the AGS, so the immediate cost to the Crown of implementing the scheme is the value of the grants allocated plus the administration costs. These costs are offset by the carbon credits that the Crown accumulates during the first ten years growth of AGS funded forests.

MAF projections indicate that 1.6 million tonnes of CO₂ will be sequestered through AGS forests over the lives of the ten-year agreements with an average carbon Net Present Value (NPV) of \$2,416 per hectare. With total costs ranging between \$2,000 and \$2,400 per hectare after the first year of operation, the AGS may achieve fiscal neutrality (see Table 13).

Table 13: Total AGS funding allocated, estimated administration costs, average costs per hectare and the NPV of carbon for both pools

Year	Area (hectares)	Total funding allocated	Total direct admin costs	Admin costs as % of total funding	Admin costs / hectare	Average tender / hectare	Total cost / hectare	Carbon NPV / hectare
2008	446	\$1,004,000	\$184,000	18.3	\$413	\$2,251	\$2,664	\$2,416
2009	2 859	\$5,161,000	\$492,000	9.5	\$172	\$1,805	\$1,977	
2010	2 629	\$5,542,000	\$762,000	13.8	\$290	\$2,108	\$2,398	
2011	3 695	\$6,754,000	\$664,000	9.8	\$180	\$1,828	\$2,008	
2012	2 814	\$5,000,000	\$537,000	10.7	\$191	\$1,777	\$1,968	

Note: Carbon NPV = NPV of first 10 years of average radiata pine growth, carbon price of \$22/tonne, discount rate of 12 percent.

Government's objectives

The Review Panel notes that Government's three originally stated objectives for the AGS were not prioritised (see Cabinet agreed objectives, page 32). The Panel understands that according to the first objective priority resulted from the process where Cabinet directed MAF to report on, and authorised Ministers to approve, "... the final design details of the scheme". Whether "final design details" appropriately include the prioritisation of Cabinet agreed objectives, rather than being constrained to developing the mechanism that delivers those objectives, may be a point for reflection. Prioritisation versus equal weighting of objectives has implications for what the scheme delivers.

Multiple objectives, even with priorities, create degrees of conflict, and this is the case for the AGS. Maximising carbon sequestration and delivering carbon credits to the Crown at least cost are not achieved by establishing forests on sites with significant soil erosion, which is the focus of

the regional pool. Nevertheless, the AGS can operate (and has) in a way that delivers substantial achievements against all objectives, but Government must recognise that none of the objectives can be maximised.

Two pools or one pool?

Submissions provided mixed thoughts on the question of whether or not the AGS should operate under two or one funding pools, based largely around administrative efficiency. The original bulk funding of regional councils to administer the region pool has changed to a process where MAF allocates the funds when invoiced by the grantee.

The current two pool system (and high / low sequestration categories under both pools) presents some complexities for MAF in managing budgets and commitments to grantees. It also operates under two grant allocation panels.

The Review Panel considers that there would be administrative advantages and efficiencies resulting from a single funding pool and allocation panel administered by MAF. Regional councils would operate as land / grant recruitment agents and be represented on the allocation panel.

Grant rates

While the success of the AGS as measured through demand for grants has been high in recent years (\$15 million of applications for \$5 million of funding in for 2011), the significant over subscription implies that the grant rates have been excessive. The highest levels of achievement against Government's objectives will occur at a grant rate that balances demand for the grant with supply of grant funding. (This matter is addressed further under Cost-effectiveness).

The Review Panel acknowledges that the AGS operates in a dynamic environment with respect to carbon (and timber) prices, that grant rates have reduced over time, and achieving this balance is challenging. However, it is a critical factor in determining performance against objectives. The Panel believes there has been scope for lower grant rates.

Tendered grant versus fixed grant

The tendered grant setting mechanism for the public pool is aimed at promoting cost efficiency by imposing a competitive application process. However, it also creates uncertainty and inconvenience (less transparent and more complex) for applicants that appear to be disincentives. For these reasons submissions are generally in favour of a fixed grant system for both pools.

A maximum grant rate is determined annually by MAF on the basis of carbon value. Given the heavy over subscription to the funding pools, either MAF's assumptions in determining the maximum grant rate (carbon price, carbon cash flow, discount rate) are different to those of participants, or participants are tendering on a different basis, possibly forest establishment cost.

It has been suggested that there could be more transparency in how grant rates are linked to carbon price and intended to provide a mechanism that is fiscally neutral to the Crown. This would assist potential applicants determine whether cash up front through the AGS is a better option for them than ten-years of carbon credits.

In this context, and with the tendered grant system having operated for several years to provide guidance on grant rates, the Review Panel considers it would be appropriate to move to a fixed grant for the public pool.

Recognition of growth profiles for different tree species

The Crown receives the carbon credits from the forest established under the ten-year grant agreements. When fast growing species such as radiata pine or eucalypts are planted, the amount of carbon credits the Crown receives probably compensates, and on some sites possibly more than compensates, for the value of the grant (depending on the assumed value of carbon and the discount rate). Where slower growing species such as Douglas fir are planted, the Crown receives relatively few credits over the ten-year agreement period and the cost to the Crown is a significant proportion of the grant.

The Review Panel considers that a more flexible grant agreement is desirable that recognises the different growth profiles of major tree species, or groups of species, and offers forest growers a preferred contract period. It is now possible to model a range of time periods for a number of species, sites and silvicultural regimes. Standard examples e.g. 10 years for radiata pine, 15 years for Douglas fir, can be provided for publicity purposes.

A few submitters have also suggested that some sites have been planted with species that are not well suited to those sites. This suggests increased scrutiny of species and sites is desirable.

The low carbon sequestration category

The existence of the low carbon sequestration category is presumably a reflection of the multiple objectives of the AGS. The low carbon sequestration category accommodates indigenous tree species and thus supports the generation of other environmental benefits, particularly biodiversity. However, there is an inherent conflict between promoting carbon sequestration and sink credits at least cost to the Crown and having a special category to fund low sequestration tree species.

There have also been difficulties for indigenous forest establishment to meet the minimum AGS stocking (stems per hectare) standard after 12 months. Many of the low sequestration applicants have been referred to the PFSI. As a result, achievements under the low carbon sequestration category of both pools have been minimal.

For these reasons the Review Panel considers that AGS should not include a low carbon sequestration category.

Mitigating the impacts of climate change and other environmental benefits

In addition to carbon sequestration, the objectives of the AGS focus on mitigating the expected impacts of climate change and generating other environmental benefits. This has resulted in an application weighting system under the public pool based on soil conservation, improved water quality and improved biodiversity, and an even stronger focus for the regional pool on soil conservation.

In the context of the Government's original multiple objectives, the Review Panel supports a weighting system that seeks to incentivise afforestation on eroding/marginal land. Carbon sequestration and mitigation of soil erosion can be achieved in combination, with modest impacts on the individual objectives. However, if carbon sequestration is the priority, the weighting system described above is questionable.

The AGS is also an important mechanism for implementing the afforestation component of farm plans under the HCEP. Farm plans are another way of targeting afforestation to severely eroding land.

The biodiversity benefit is more problematic. It strongly favours indigenous species that have low carbon sequestration rates but, as noted above, there are difficulties for indigenous forest meeting the AGS establishment criterion.

For these reasons the Review Panel considers that biodiversity should not be part of the weighting criteria. This is not suggesting that biodiversity is unimportant, but that the level of conflict with other objectives is too great. Biodiversity benefits will result from afforestation regardless of the absence of a weighting factor.

300 hectare application limit

Current policy requires that applications do not exceed 300 hectares in order to favour smaller-scale afforestation. Some submissions have suggested that the limit should be lowered to 50 or 100 hectares.

The downsides to the 300 hectare limit are that it eliminates some investment proposals and does not capture economies of scale for administration. (Lower maximum areas would exacerbate the economies of scale issue). On balance the Review Panel supports the 300 hectare maximum because the AGS has limited Government funding, it is generally the small-scale forest growers who face cash flow constraints, the ETS (Forestry) is better suited to larger-scale projects, and the smaller afforestation blocks can often be better targeted to eroding land.

Expense transfer

In any one year a number of approved AGS projects under the public pool may not be completed for reasons such as delays in land preparation. Applicants request approval to complete the project the following year and MAF subsequently seeks Treasury approval for an expense transfer, for which there is no certainty.

The Review Panel considers that there should be some financial mechanism to enable funding in the subsequent year where projects have been delayed through reasonable circumstances. Multi-year appropriations may address this situation i.e. rather than MAF receiving \$5 million per year for three years \$15 million would be appropriated across three years.

Private funding

The possibility of private enterprise working in partnership with the Government to deliver the AGS has been raised with the Review Panel. The suggestion is that private enterprise would provide the funding for the AGS grants on a similar basis to the current Government funding i.e. in return for the carbon credits over an agreement period, while the Government (MAF) administers the scheme and takes a proportion of the carbon credits to cover its costs.

While a private-public partnership approach of this nature has some attraction in the current environment of tight restraint on Government expenditure, the possible drawbacks are that the private investor would want the scheme to be carbon driven with no targeting of eroding land or a maximum application area limit (300 hectares currently). However, the mechanics of how such a private-public partnership approach might operate can only be determined if the Government opted to explore this opportunity with potential private investors. The Review Panel is aware of one potential private investor, but there may be others.

Grant capitalisation into land value

Submissions have raised concern about the possibility of the value of the AGS grant being capitalised into land value. This would be an undesirable outcome (and another factor skewing the value of land compared to its sustainable use value).

The Review Panel considers that this is unlikely to be a significant issue given that the AGS grants can only facilitate about 3000 hectares of new planting nationally per year. However, it is a potential issue that should be monitored.

Alignment with other schemes (duplication, omissions, misalignments)

The relationship between the AGS and the PFSI is addressed in the discussion on the PFSI (see page 27).

The AGS regional pool and the ECFP both focus on soil erosion, but there are differences arising from:

- The cost of the grants for the AGS being largely or fully compensated by the carbon credits the Crown receives, whereas the cost of the ECFP grants falls fully with the Crown;
- The AGS operating under ten-year agreements and the ECFP under 50-year covenants;
- AGS grantees being able to enter the PFSI or ETS (Forestry) after ten years, whereas ECFP grantees can enter the PFSI or ETS (Forestry) at any time (although post-2007 ECFP grants may be reduced).

The AGS regional pool provides the main funding mechanism for afforestation under the HCEP, and is distinct from HCEP funded afforestation through minimum/maximum area restrictions.

The AGS also provides an alternative pathway to carbon forestry compared to the ETS (Forestry) by mitigating cash flow constraints for smaller-scale forest growers.

While there are some differences there are no significant duplications, omissions or misalignments among the AGS and the other schemes. Appendix One provides more detail on comparisons among the schemes.

Cost-effectiveness

The AGS has three objectives, originally with equal weighting but subsequently with priority given to carbon sequestration. Cost-effectiveness against each objective is discussed below.

Objective 1: providing an alternative mechanism with lower transaction costs (i.e. than the ETS (Forestry)) for participants that allows landowners to recognise the climate change mitigation benefits of afforestation

The AGS is clearly a separate and alternative mechanism to the ETS (Forestry) for investors wanting to pursue carbon forestry. It is well suited to smaller-scale investors lacking up-front capital to invest in forestry. MAF has commented that most successful AGS applicants have indicated they currently plan to join the ETS (Forestry) at the expiry of their ten-year contracts. Whether this actually happens will depend on the state of the ETS (Forestry) and the outlook for carbon prices in ten years time.

The Review Panel has no data on the relative costs of entering the AGS versus the ETS (Forestry). Submissions have made references to the ETS (Forestry) being more complex for participants than the AGS, but also to the ETS (Forestry) being low cost.

Administration of the AGS is not cost recovered by MAF, submissions have not raised issues around costs, and the AGS has been over-subscribed for the last two years. These factors suggest that cost for applicants is not an issue. Put another way, the value of the grant relative to the costs for applicants is clearly attractive.

Objective 2: establishing new Kyoto-compliant forest in areas that will assist with reducing the expected impacts of climate change and generate other environmental benefits

Climate change is expected to result in more frequent, and more severe, storm events affecting most parts of New Zealand. Of particular concern are ex-tropical cyclones and their impacts on the erosion prone hill country of the eastern and southern North Island.

Administration of AGS funding pools has weighting systems that favour grant applications benefiting soil conservation and water quality. The regional pool has an even stronger weighting mechanism towards land with severe soil erosion. In tandem with the HCEP (the AGS regional pool has been the principal mechanism facilitating afforestation under the HCEP), regional councils in the mid and lower North Island have been unanimous in declaring the success of the AGS in assisting to facilitate land use change and mitigate soil erosion.

Success has, however, been at relatively modest rates (1000 to 2000 hectares afforested per year under the regional AGS pool) compared to the extent of hill country with severe soil erosion (about 1.1 million hectares nationally, with most in the lower-eastern North Island). The annual afforestation rates are dependent on the level of pool funding and the level of the grant per hectare.

The immediate cost to the Crown of achieving land use change to mitigate soil erosion is between \$2,000 and \$2,400 per hectare. This will be offset by the carbon credits that accrue to the Crown over the ten-year agreement periods. The value of the carbon credit offset depends on the future value of carbon, the carbon cash flow, and the assumed discount rate. The AGS may work out to be fiscally neutral to the Crown (see Table 13).

The other main associated environmental benefit is improvement in water quality, primarily through the reduction in sedimentation.

These environmental benefits relating to the mitigation of soil erosion and improvement of water quality are complex to value and the Review Panel has not attempted to do so, other than reflecting on the areas afforested. They result in both on-site and downstream catchment benefits.

Given the small areas planted under the low sequestration category (which includes indigenous tree species) the resulting biodiversity co-benefits will be positive, but modest.

Objective 3: creating additional Kyoto sink credits at least cost to the Crown.

The question of cost-effectiveness is about achieving objectives at least cost. Multiple objectives require valuing the carbon credits and environmental benefits obtained and then expressing them on a per dollar basis and assessing whether this is the least cost way.

If environmental benefits are simply co-benefits and not the major objective of the AGS, then the costs to the Crown of the carbon credits (grants plus administrative costs - see Table 13) appear to fall between \$2,000 and \$2,400 per hectare (ignoring the first year of operation where set up costs skew ongoing costs). Does this represent least cost to the Crown?

With respect to the level of the grants, the fact that the public and regional pools have both been significantly over-subscribed since 2009 suggests that there has been room to reduce the maximum grant rates further and drive demand for grants closer to the supply of funding in the pools. The most efficient grant level for fixed funding is where demand equals supply. A lower grant level facilitates greater areas of afforestation and, other things being equal (species, siting, management regimes, contract terms), more carbon credits to the Crown. Administrative costs would be increased as a result of more contracts, but administrative costs constitute a lower cost per hectare (and thus per carbon credit) than grants.

With respect to administration costs, MAF analysis uses derived direct administration costs based on dedicated staff time. Total administration costs are not specified. In addition, the Review Panel understands that MAF does not record actual staff time against AGS implementation (or against other schemes). This situation is inappropriate, particularly given the specific AGS objective of creating additional Kyoto sink credits at least cost to the Crown. How can MAF determine if the implementation of the AGS is delivering carbon credits at least cost if the actual costs of administration are unknown?

There are also issues around creating additional carbon credits at least cost to the Crown associated with:

- Administering two pools as opposed to one;
- Conflict between the objectives of carbon sequestration and generating environmental co-benefits;
- Inclusion of a low carbon sequestration category;
- Lack of recognition of growth profiles of different tree species.

While the costs and benefits to the Crown reflect fiscal neutrality this is not directly relevant to assessing cost efficiency against the scheme's objectives.

The Review Panel concludes that there is scope to deliver carbon credits at a lower cost to the Crown through lowering grant rates to balance supply and demand, and through refinements in scheme design that collapse two pools into one, remove the low carbon sequestration category, and introduce flexible agreement periods that reflect growth profiles of key tree species.

Future roles (continuation, merging, abandoning)

Are the objectives still valid?

Objective 1 remains valid. Many farmers, small-scale landowners or investors do not have the initial cash flow to fund forest establishment, nor are they interested in the ETS (Forestry) transaction costs such as mapping, registration, filing of returns and the implications if land is transferred. The AGS allows them to afforest by providing an initial cash sum reflecting ten-years worth of ETS (Forestry) participation, and is designed to minimise the grantee's administrative costs. In addition, evidence to date suggests that the ETS (Forestry) has yet to incentivise significant afforestation, while the AGS has been fully subscribed and facilitating around 3000 hectares of new planting per year.

Objective 2 also remains valid as soil erosion remains one of the principal land management issues in New Zealand. Grants are targeted to land where afforestation would result in environmental co-benefits such as reduced soil erosion and improved water quality. Regional councils that have soil conservation and water quality issues made detailed submissions on the value of Crown financial support in their sustainable land management programmes. There are strong synergies among the AGS, ECFP, HCEP and the councils' programmes. However, grant schemes will only ever make small inroads into the issue New Zealand faces with severe soil erosion on hill country land and the need for land use change.

Objective 3 and the need for least cost carbon credits is related to the first objective, and also remains valid. Under the Kyoto Protocol, afforestation generates Removal Units (RMUs) that contribute positively to New Zealand's net Kyoto position. A negative net position would have fiscal impacts for New Zealand. However, afforestation in the first Commitment Period (CP1) will not have a significant impact on the CP1 net position as the amount of carbon sequestered is small

in the first five-years of a forest's life. The impact will be more significant in CP2 and beyond, and continued AGS afforestation would have a long-term impact.

Continued afforestation in the future will therefore be important with respect to fiscal impact, will contribute to net position calculations and make a positive contribution to any future voluntary political commitment. Indeed, afforestation may be a least cost way to meet a commitment.

In 2010 there was only about 6000 hectares of afforestation, half of which was funded by grant schemes (the AGS and ECFP). Private sector interest in afforestation is developing and will increase in the future if more certainty develops around cap and trade schemes, and carbon price. It is notable that some of the current interest is on carbon forestry on ECFP target land, where the income is from payment for an environmental service (carbon), rather than traditional timber products.

However, the medium-term scale of privately funded afforestation is uncertain. The actual/perceived uncertainty swirling around the ETS means it is unlikely to be a major driver of new forest planting for a number of years.

Options

There are three principal options for the future of the scheme:

1. Status quo – termination on 30 June 2013;
2. Continue funding on the same basis with operational improvements;
3. Continue funding a new scheme/s where environmental services are separated.

As the original objectives remain valid, termination of the scheme is not desirable. It would have negative impacts on:

- Carbon sequestration and New Zealand's emission reduction targets;
- The rate of progress in achieving regional councils' sustainable land management targets;
- Landowners' abilities to afforest marginal areas of their properties.

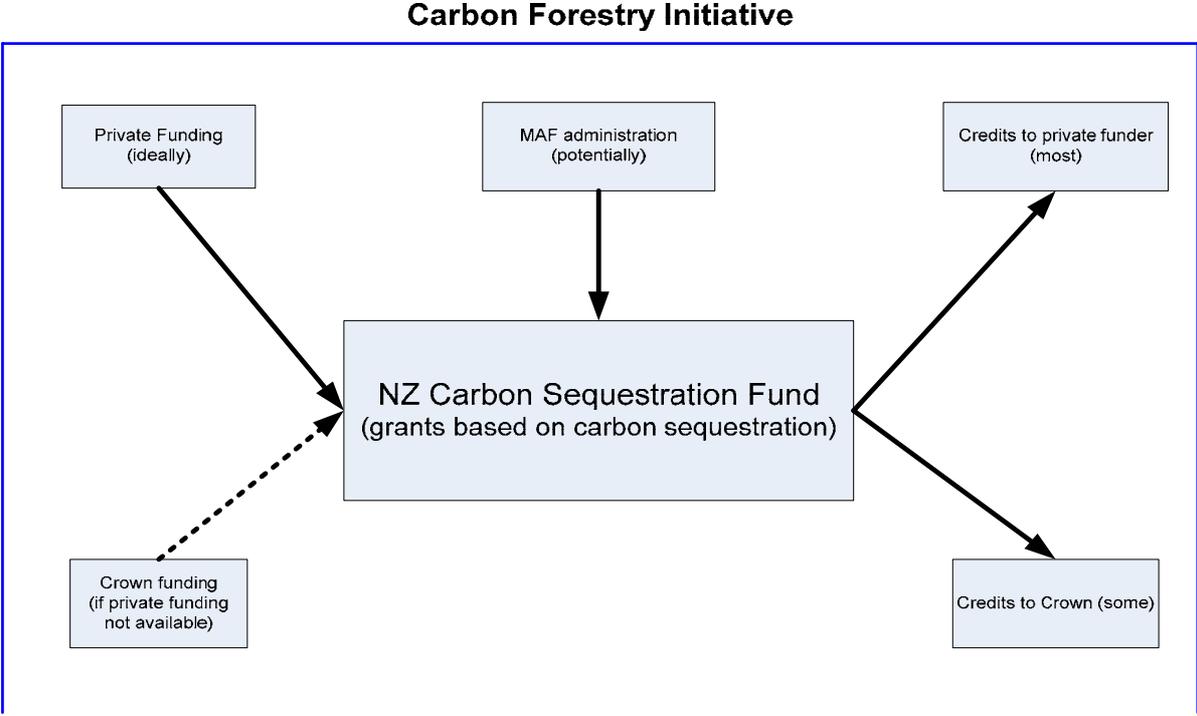
If the AGS is continued on the same basis, then the following enhancements will be desirable:

- Operate one pool administered by MAF that would offer grants at a fixed rate per hectare;
- Cap the fixed rate at the NPV of the carbon income stream minus MAF's administration costs to ensure that the cost of carbon is less than the market price;
- Set the fixed rate initially at \$1500 per hectare, and adjust it annually depending on demand (increase if demand is low, decrease if demand is high);
- Consider paying a soil/water premium above the carbon value for projects that will mitigate soil erosion and/or improve water quality;
- Utilise regional councils to recruit and prioritise applications;
- MAF to confirm land eligibility on all applications;
- Prioritise all applications on environmental co-benefits using the scoring system developed by the Regional Pool Allocation Panel;
- Adjust the agreement term for species categories to reflect their growth profiles;
- Abandon the low sequestration category and grants for indigenous forest reversion;
- Scrutinise applications more closely to ensure the species match the sites.

However, the Review Panel favours the AGS objectives being delivered under new models: carbon sequestration under a Carbon Forestry Initiative (see Diagram 1) with a Carbon

Sequestration Fund (complementing the PFSI and ETS (Forestry)), and soil erosion under a Soil Erosion Forestry Initiative combining the HCEP (and the ECFP post-2020) with a Regional Soil Conservation Grant Pool. The concept of a Soil Erosion Forestry Initiative is addressed under the HCEP.

Diagram 1:



Ideally, the proposed Carbon Sequestration Fund would be financed by a private investor (or investors), with Crown funding the fall back option. The privately funded mechanism would operate on the same basis as the current AGS agreements with grants in return for carbon credits. It may involve a private-public partnership approach with MAF administering the privately funded grant agreements in return for a proportion of the carbon credits. However, the details of such an initiative can only be developed between a potential private funder and the Crown.

This privately funded Carbon Sequestration Fund should operate through a fixed grant with agreement terms based on potential carbon sequestration. The grants would be reviewed annually and decreased or increased with the aim of balancing demand with pool funding. If there were too many applicants, priority would be awarded to those who offer most carbon for the grant value, regardless of co-benefits that may ensue.

The mechanism would be solely for the forward-purchase of carbon. For this reason it would be used for carbon sequestration in existing or new forests. If new-land planting was a key objective for Government then a Government funded scheme could be restricted to new forests.

Other Issues from Submissions

The magnitude of this review which covers four forestry schemes has been such that the Review Panel has not been able to address all the issues that have been raised. Such issues that relate to the AGS and the Review Panel deem potentially relevant are listed below:

- Consider a sliding scale for grants depending on level of regional benefits (higher grant) v landowner benefits (lower grant).
- Is there a way of overcoming the issue of retrospective AGS payments which mean some participants, including Maori land owners, struggle to get bridging finance to cover the short-term funding deficit?
- Is there a way around the issue of Government owned land not qualifying even if managed by community groups who do not want leases (which do qualify)?

Recommendations

The recommendations below refer to that part of option 3 that concerns carbon sequestration (see pages 44-45). The part concerning soil erosion is addressed in the recommendation under the HCEP.

The Review Panel recommends exploring the option of a new AGS post-2012/13 (a Carbon Forestry Initiative) with grant funding sourced from the private sector, and with:

1. A single objective of carbon sequestration;
2. One funding pool (and no low carbon sequestration category) operating through a fixed annual grant potentially administered by MAF;
3. A maximum grant rate set by the value of carbon, but with a strong emphasis on balancing the annual demand for grants with supply of grant funding;
4. More flexible grant agreements that recognise the different growth profiles of major species (including indigenous species), possibly based on varying durations;
5. Operating details being developed between the Government and any potential private funder;
6. Recording and monitoring of administration costs.

Afforestation Schemes Developed under Sustainable Land Management Policy

East Coast Forestry Project

The East Coast Forestry Project (ECFP) is a grant scheme that was established in 1992 with the first forest planting in 1993. It has Government endorsement and approved funding to 2020. The ECFP has struggled historically to use available funding and deliver significant areas of afforestation, and more recently reversion to indigenous forest and pole planting. This situation may change if it successfully operates in tandem with the ETS (Forestry) or the PFSI.

The terms of reference for this review of MAF afforestation schemes limit consideration of the ECFP to matters of cost-effectiveness, implementation issues and opportunities, and the interactions with the other forestry schemes. The review can not consider the policy supporting the ECFP, its goal or its continuation (other than stating them as matters of fact).

Cabinet agreed goal

The goal for the ECFP was revised by Government in the 1999 review of the scheme, and reconfirmed subsequent to the 2005 review. In 1999 Cabinet (CBC Min (06) 11/2):

Agreed to modify the East Coast Forestry Project (the Project) with a primary goal of sustainable land management, targeting the worst 60,000 hectares of severely eroding land, with Government funding to continue for the balance of the current Project term (ending in 2020), subject to an officials’ review of progress against objectives after a further five years of operation under the new goal and operational procedures.

The above statement implies there is a secondary goal/s. This is not the case. The ECFP has a single goal as identified above.

Achievements with respect to goal

Since the first planting in 1993, the ECFP has resulted in 35 552 hectares being treated by 356 grantees.

Table 14 provides data on the number and area of approvals for different treatments for the last four years. Applications may be made for projects starting in any nominated year up to three years after the application date.

Table 14: ECFP grant approvals by treatment for 2007 to 2010

Year	Pool	Approvals	Forest (hectares)	Reversion (hectares)	Poles (hectares)	Total (hectares)
2007	Large	14	1 978	702	104	2 785
	Small	19	74	231	95	399
	Combined	33	2 042	933	199	3 186

Table 14 (continued)

Year	Pool	Approvals	Forest (hectares)	Reversion (hectares)	Poles (hectares)	Total (hectares)
2008	Large	7	1 008	784	–	1 793
	Small	18	178	199	61	438
	Combined	25	1 186	983	61	2 232
2009	Large	6	1 393	–	249	1 742
	Small	13	80	90	236	405
	Combined	19	1 473	90	485	2 158
2010	Large	15	5 635	419	349	6 403
	Small	13	110	79	102	291
	Combined	28	5 745	498	451	6 694
Totals	Large	42	10 014	2 838	702	13 554
	Small	63	442	599	494	1 535
	Combined	105	10 456	3 437	1 196	15 089

The ability to commence a project up to three years after approval makes it difficult to compare approved areas with actual areas established (see Table 15). However, the implication from the low establishment rates in Table 15 is that there is a dramatic drop out rate from approval to actual establishment.

Table 15: Planted and reversion areas established from 2007 to 2010

Year	Planted area ¹ established (hectares)	Reversion area established (hectares)
2007	144	233
2008	473	258
2009	275	572
2010	667	250

Note 1: Planted area includes forest and poplar/willow poles.

The Review Panel understands that approximately two-thirds of the 35 552 hectares treated to date are target land (about 24 000 hectares). With combined forest and reversion establishment rates below 1000 hectares per year during 2007 to 2010, and the project scheduled to run another ten years, there is considerable doubt that it will get anywhere near treating the worst 60 000 hectares of severely eroding land.

Data and advice provided to the Review Panel suggest much greater interest in the scheme in 2010, supposedly driven by interest in the ETS (Forestry) in combination with the ECFP. However, it is not possible at this time to make predictions about the likely impacts over the next few years, or how much of the 5745 hectares approved for forestry in 2010 will actually be planted in the next three years.

The Gisborne Combined Regional Land and District Plan identifies Overlay 3A land and associated rules require this to have effective tree cover by 2021. Target land under the ECFP

includes about 13 000 hectares of Overlay 3A land, so this should drive an increase in applications over the next ten years.

Financial costs to the Crown in delivering the scheme

The ECFP currently receives \$4.5 million per year to cover project grants and administration. The administration component is estimated to be about \$400,000 per year (see Cost effectiveness, pages 54-55), leaving approximately \$4.1 million per year for grants, but during 2007 to 2009 only \$1.3 to \$1.8 million of grant funding was allocated (see Table 17). Grant rates for afforestation range from \$1,476 to \$2,280 per hectare (depending on distance to port), \$1,512 per hectare for reversion, and 70 percent of actual and reasonable costs for pole planting.

Gisborne District Council

The use of tree cover on erosion prone land is the foremost solution to addressing the Gisborne District’s soft rock soil erosion issue. This has not been possible on the necessary scale without central Government intervention through incentive schemes as it is beyond the resources of the Council.

The Overlay 3A rules in the Combined Regional Land and District Plan which require effective tree cover by 2021 rely on cost effective treatment options being available under the ECFP. In practice the ECFP supports the implementation of the Overlay 3A rules, and the rules should drive interest in ECFP grants for land treatment. Consequently, a good working relationship between MAF ECFP management and the Gisborne District Council is important. Most submissions indicated that this relationship is now working satisfactorily.

Successful pole planting requires close supervision by experienced people so the Council now invariably co-ordinates and supervises ECFP pole planting on behalf of farmers.

Financial, environmental and social costs and benefits to the Crown, local authorities and participating landowners

Table 16: Financial, environmental and social costs and benefits

	Financial	Environmental	Social
Crown	<ul style="list-style-type: none"> • Funds costs of grants and administration • No direct financial returns 	<ul style="list-style-type: none"> • Gains in water and soil conservation values • Carbon credits if land not under PFSI or ETS 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes
Gisborne District Council	<ul style="list-style-type: none"> • No grant costs • Costs from administering supporting Regional and District Plan provisions 	<ul style="list-style-type: none"> • Facilitates implementation of Overlay 3A rules in District Plan • Gains in water and soil conservation values 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes • Protection of downstream land uses
Landowners	<ul style="list-style-type: none"> • Receive grants for land treatment options • Some forests may not be viable to harvest • May receive carbon credits via PFSI or ETS • Cannot afforest scrub covered land 	<ul style="list-style-type: none"> • Facilitates sustainable land use 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes

Costs and benefits to local communities

The local community incurs some direct costs through ratepayer funding for the administration of associated Overlay 3A rules. In return there are on-site sustainable land use benefits and downstream mitigation of flooding and soil deposition.

Implementation: costs, issues, opportunities

Costs and key issues that have been raised through submissions and consultation meetings, and by the Review Panel, are considered below. Other issues have also been raised and those of potential significance are listed at the end of this section of the report. The Review Panel invites MAF to consider these other issues as part of their processes for ongoing policy development and implementation of the ECFP.

Costs

The ECFP currently receives \$4.5 million per year to cover project grants and administration, but total spending from 2007 to 2009 has been between \$1.7 and \$2.2 million per year. Much higher annual amounts will have been allocated but not spent due to the high drop out rate from grant approval to actual establishment.

Administration costs have not been reported since 2007/08 when they were \$429,000. The Review Panel assumes that they are similar today, but the lack of information hinders assessment of performance. (See discussion under Cost effectiveness, pages 54-55).

High drop out rate

The high drop out rate between approvals and actual establishment has efficiency implications for the ECFP through unspent grant funding that can not be carried forward to the subsequent year, and unproductive administration time. Drop out probably arises from a range of blockages that apply variously to different applicants. They include a lack of landowner finance coupled with retrospective grant payments meaning short-term bridging finance is required, complications for multiply-owned Maori land achieving landowner sign-off and a lack of genuine interest in undertaking land use change.

The interest in joint ventures from private investors that couple ECFP grant forests with the ETS (Forestry) may result in a source of bridging finance. The removal of the requirement for a covenant (see below) may also assist Maori land owners implement their projects.

Covenants

Fifty-year covenants for forestry, pole planting and reversion were introduced in 2007 in response to instances of deforestation of ECFP grant forests. They add complexity for participants and present a particular obstacle for multiply-owned Maori land entering the ECFP due to the need for approval from the Maori Land Court for land alienation, which is considered unlikely for this length of time. There may be about 39 000 hectares of Maori land available for afforestation⁶.

The Review Panel considers that covenants are not desirable and they should be replaced by agreements that are similar to those used for the AGS (that is ten-year agreements whereby a grantee is obliged to repay a grant with interest if the land is deforested within the ten-year term). Deforestation can best be addressed through policies and rules of the Gisborne Combined

⁶ Miko Kirschbaum et al, 2009. *Carbon Stocks and Changes in New Zealand's Soils and Forests, and Implications of Post-2012 Accounting Options for Land-Based Emissions Offsets and Mitigation Opportunities – Including Appendices*, Landcare Research Contract Report: LC0708/174 prepared for the Ministry of Agriculture and Forestry, Landcare Research, Lincoln, April 2009.

Regional Land and District Plan, the provisions of the agreements (for the duration they run), and possibly through deforestation liabilities imposed under the ETS (Forestry) or PFSI for those who also opt for these mechanisms.

There is a risk in this approach arising from the fact that covenants bind future landowners, whereas contracts do not. The AGS contract obliges a landowner to assign the contract to any subsequent landowner. If this does not happen in a sale situation the Crown may have an action against the original landowner for breach of contract, but cannot necessarily enforce the terms of the contract against the subsequent landowner. The Review Panel considers that the risk of deforestation can be sufficiently mitigated through the other means, and that the advantages of moving away from the covenant approach are significant.

Policy on ECFP and ETS (Forestry)

Government's policy is that post-2007 ECFP grantees may have their grant reduced if they opt to join the ETS (Forestry). The Review Panel understands that to date only one ECFP grantee has registered their forest in the ETS (Forestry) and that the outcome with respect to the grant is yet to be determined. However, this situation is likely to become more common with the apparent recent interest in carbon from ECFP forests.

The policy is based on the notion that Government would probably be "...over-incentivising landowners to afforest"⁷ if both the full ECFP grant and access to the ETS (Forestry) were available through potential to earn income from timber and carbon. The 2007 date is when the ECFP moved from a tendered grant to a fixed grant, and where the amount of the grant was based on tender history. Up to 2007 it was viewed that the potential of earning income from carbon would not have been factored in to the tender rate.

In contrast, ECFP grantees can participate in the PFSI with no reduction in the ECFP grant. The different policy positions are based on the notion that the ability to earn income from timber under the PFSI is constrained by the harvesting restrictions, thus there is no over-incentivising of landowners to afforest.

It is unlikely the policy that post-2007 ECFP grantees may have their grants reduced if they join the ETS (Forestry) has had significant (if any) impact on uptake of the ECFP to date. There has been very little new forest planting in New Zealand motivated by the ETS (Forestry), and only one test of the ECFP grant reduction policy thus far. However, as noted above, this situation is likely to change with recent interest in carbon from ECFP forests.

The Review Panel suggests that the policy of reducing the grant (by an unknown amount) for post-2007 ECFP participants entering the ETS (Forestry) should be reviewed. Based on the principle of separate services (or products) justifying separate payments, the Panel suggests that there should be no grant reduction. The principle of separate payments for separate services is that:

- It is easier to account for an environmental service when the payment for it can be tracked to a single source rather than being conflated with payments for other services; and
- In afforestation situations where multiple services are offered, multiple payments will provide sufficient reward to justify that afforestation, and provide an advantage over situations where a lesser number of services are offered.

⁷ MAF, 2007. *Briefing on Changes to the Permanent Forest Sink Initiative and the East Coast Forestry Project as a Result of the Emissions Trading Scheme*, MAF briefing paper B855, September 2007.

This change in policy also has the potential to significantly lift the performance of the ECFP with respect to the annual areas of afforestation. The ECFP needs a major lift in performance to meet Government's stated goal.

Funding allocations

The ECFP has annual funding approved through to 2020, but complications arise from forestry, pole planting and reversion receiving part of their grants at the time of establishment, and part three to eight years later. (This is when thinning is undertaken for forestry or long-term success of pole planting and reversion is more assured).

For forestry regimes, which have two mandatory thinning requirements (the last expected to occur at year eight), grants will not be able to be approved after 2012 because funding will not be available beyond 2020 to complete the necessary thinning. This issue needs urgent attention. (The problem is similar, but not so pressing, for pole planting and reversion). Either an approved funding provision from 2020 to 2028 to complete thinning operations is required, or that part of the grant related to thinning will have to be progressively pre-paid. The former option is preferable as it enables better auditing of performance.

Alignment of payment schedules

Grants are paid in instalments as follows:

- Forestry - 70 percent of the approved grant is paid following completion of establishment and registration of the covenant and 30 percent is paid after thinning;
- Pole planting - 80 percent is paid following completion of establishment and registration of covenant, and 20 percent is paid in the third year after establishment;
- Reversion - 50 percent is paid in the first year and with registration of the covenant and 50 percent is paid in the fifth year.

Administration would be simplified if the forestry and pole planting payment splits were aligned. The Review Panel suggests that both work on 70 and 30 percent splits, with the years of payment remaining as they currently stand.

Expense transfer

The issue is similar to that discussed under the AGS where projects may not be completed in the approved year and Treasury approval is required for an expense transfer, for which there is no certainty.

Again, the Review Panel considers that there should be some financial mechanism to enable funding in the subsequent year where projects have been delayed through reasonable circumstances. Multi-year appropriations may address this situation.

Certification of claims by auditors or accountants

Claims for payments must be certified by the applicant's company auditor or a chartered/practising accountant. In many instances the certifier has no direct involvement with the project and has no knowledge of the expenditure. It would be more appropriate for the grantee to certify the expenditure, as occurs under the AGS.

Pole planting

Pole planting can be a successful land treatment option, but submissions have highlighted the need for good supervision. The lessons from failures in the past appear to have been learned, with Gisborne District Council staff providing the oversight for these operations. The Review Panel emphasises this requirement for good supervision.

Regulation

The Review Panel believes that financial incentives paid for by taxpayers to facilitate land use change should be supported by effective land management regulation under regional plans. (See discussion under the HCEP, page 63). The Gisborne Combined Regional Land and District Plan does contain policies and rules associated with Overlay 3A land that require works plans by June 2011 and effective tree cover by 2021, but they appear to form a weak regulatory approach due to the generous timeline for action to mitigate severe soil erosion. Also, the regulatory provisions address target land (defined Land Use Capability units), but not surrounding land that may also require treatment to achieve effective mitigation of soil erosion at a catchment level.

The Panel was advised that about 400 works plans will be required, and as at November 2010 fifty plans had been approved and 50 were in the process of development. This raises concerns over the slow implementation (where are the other 300 plans?), and the unknown penalty for failure to comply. Similarly, what is the penalty if effective tree cover does not exist on Overlay 3A land by 2021? How will the Council address this potential situation in the absence of ECFP funding?

Manuka/Kanuka

Land with manuka/kanuka vegetation is ineligible for ECFP grants. Some submitters expressed the view that this land should be eligible, and that afforestation would provide an important commercial return from otherwise unproductive land.

The exclusion of manuka/kanuka from eligibility is on the basis that the goal of the ECFP is to mitigate soil erosion, and manuka/kanuka provides protection from erosion. This is supported by research by Bergin et al (1993)⁸ who investigated manuka/kanuka dominated scrub in the East Coast region and concluded that:

A substantial decrease in shallow landslipping on steep erosion-prone hill country during rain storms can be expected within 10-15 years of establishment of indigenous manuka/kanuka scrub. A high level of protection is provided by older fully-stocked scrub stands.

Given that the goal of the ECFP is solely to mitigate soil erosion, the Review Panel can not support change to the eligibility provision.

Restrictive forestry regimes

Submissions have challenged the lack of flexibility in the ECFP specified forestry regime for radiata pine, and suggested more species should be included.

The current radiata pine regime requires initial establishment at a minimum of 1250 stems per hectare, with two thinnings down to a stocking rate of between 250 and 500 stems per hectare. It has been suggested that a lower initial stocking of 1000 stems per hectare and one thinning to 450 stems per hectare would lower the cost significantly, with no loss of soil protection.

The prescribed forestry regimes only cover radiata pine, Douglas fir and closed spaced poplars. However, the Review Panel notes that other species can be considered on a case-by-case basis.

⁸ Bergin, D. O; Kimberely, M, O; Marden, M; 1993. *How soon does regenerating scrub control erosion?* N.Z. Forestry, August 1993: 38-40. N.Z. Institute of Forestry, Wellington.

The Panel suggests that MAF should review the radiata pine regime and the possibility of including the alternative regime above (or similar), and consider whether any additional species may be appropriately included.

Applications a year before planting

Applications for ECFP grants must be submitted by a specified date the year before planting. The Review Panel has been advised of instances where this has stopped projects that could have proceeded within the year, assuming grant funding was still available.

The provision for applications a year before planting is presumably to allow MAF to assess the merits of all applications together and in an orderly way, but it is unfortunate if planting opportunities are missed. The Panel wonders whether there could be a mechanism for considering late applications for planting that would proceed that year if unallocated funding existed?

Alignment with other schemes (duplication, omissions, misalignments)

The relationship between the ECFP and the AGS (regional pool) is addressed in the discussion on the AGS (see page 41).

The ECFP and the HCEP are sustainable land management (soil erosion) initiatives with unique geographic coverage. There are differences associated with the:

- Targeting mechanism for land use change being solely through Land Use Capability units under the ECFP and through farm plans under the HCEP;
- 50-year covenants for afforestation and reversion funded by ECFP grants compared to ten-year agreements under the AGS grants used by the HCEP;
- The ECFP requiring at least 1250 stems per hectare for forest establishment and between 250 and 500 stems per hectare after final thinning, while the HCEP (through the AGS) requires a minimum of 750 stems per hectare for the first four years and at least 500 stems per hectare for the remainder of the ten-year agreement

While there are some differences between the ECFP and the HCEP, the only significant misalignment concerns the stocking standards. Appendix One provides more detail on comparisons among the schemes.

Cost effectiveness

In 2010/11 the ECFP received funding of \$4.5 million to cover project grants and administration, and prior to this the annual funding was \$5.8 million. Expenditure in recent years has accounted for less than half of the available funding (see Table 17).

Table 17: ECFP expenditure on grants and administration for 2007 to 2009

Year	Grants	Administration
2007	\$1.757 million	\$429,000
2008	\$1.347 million	Not available
2009	\$1.438 million	Not available

Note: expenditure on grants covers afforestation, pole planting, reversion, and thinning of previously afforested areas.

Grants

The unspent money can be largely accounted for by the high drop out rate from the approval of applications to establishment. (For example, in 2009 approved applications for the various treatment options would have been valued in excess of \$4 million). This drop out rate is a major impediment to the effectiveness of the ECFP, and to the likelihood of it achieving Government's stated goal of sustainable land management, targeting the worst 60 000 hectares of severely eroding land.

Sustainable land management has been achieved primarily through afforestation, with current grant rates of between \$1,476 and \$2,280 per hectare. Grant rates are calculated on the basis of the top-up amount required for forestry to achieve an internal rate of return (IRR) of 8 percent (pre-tax). Estimated IRRs for New Zealand forestry vary, with a 2009 survey (Manley, 2010⁹) reporting ranges between 1 to 7 percent for pre-tax cash flows. A higher IRR for ECFP forests is justified by the higher risks associated with the eroding land being afforested.

Approved areas can be planted in any nominated year up to three years after the application. Some 2042 hectares were approved for planting in 2007. In the three year period from 2007 to 2009, only 892 hectares were actually planted (and this presumably includes some areas approved in other years), to give an average of just 297 hectares per year. The drop out rate for 2007 appears to be in the order of sixty percent of the approved area.

In 2007 the area approved for reversion was 933 hectares, and during the three year period from 2007 to 2009 some 1063 hectares were established (an average of 354 hectares per year).

In the context of a target of 60 000 hectares of the worst eroding land, of which about 24 000 hectares (two-thirds of the total planted area of 35 552 hectares) have been planted since 1993, the annual areas being treated are small and with the project set to run for another ten years the likelihood of treating the target area is low.

The area approved in 2010 has increased significantly to 5745 hectares, apparently driven by interest in carbon credits under the ETS (Forestry), and possibly by the rules associated with Overlay 3A land. The approved applications have grant values of at least twice the available annual ECFP budget, and appear to constrain the level of approvals in 2011 and beyond.

Costs of administration

Analysis is constrained by the lack of current cost data for administration of the ECFP. The latest information is for 2007/08, where the reported cost was \$429,000. It is not possible to accurately convert this to a per hectare administration cost because in addition to the annual areas of afforestation, reversion and pole planting that it covers, there is also thinning of previously established forest areas.

The Review Panel suspects that the administration costs for the ECFP are high compared to the PFSI (not a grant scheme) and the AGS. Costs should be recorded and monitored, and if they are significantly higher than for the AGS the reasons need to be identified and addressed. A contributing factor will be the drop out rate from approval of grants to establishment of trees.

⁹ Manley, Bruce, 2010. *Discount rates used for forest valuation – results of 2009 survey*, NZ Journal of Forestry, February 2010: 19-23. NZ Institute of Forestry, Rotorua.

Future roles

The terms of reference for this review state:

With regard to the ECFP, the review will only address cost-effectiveness, implementation issues and opportunities, and the inter-actions with the other forestry schemes. The review will not consider the policy supporting the ECFP, its objectives or its continuation.

In this context the Review Panel considers that there are a range of refinements that should be introduced to improve the cost effectiveness of the ECFP. These refinements have been discussed above under Implementation: costs, issues, opportunities.

The Review Panel believes that ultimately there should be one New Zealand Soil Erosion Forestry Initiative. This concept is addressed under the HCEP.

Other Issues from Submissions

The magnitude of this review which covers four forestry schemes has been such that the Review Panel has not been able to address all the issues that have been raised. Such issues that relate to the ECFP and the Review Panel deem potentially relevant are listed below:

- Is there a case for some class 7e land being considered not suitable for forest harvesting, and thus the focus should be on reversion?
- Is the fastest way to encourage indigenous reversion to establish a nurse crop of exotic trees (not intended for harvest)?

Recommendations

The Review Panel recommends:

1. Replacing the requirement for covenants with agreements similar to those used for the AGS;
2. Abolishing the policy that post-2007 grantees may have their grants reduced if they join the ETS (Forestry);
3. Providing funding to 2028 to cover the thinning costs associated with new planting from 2013 to 2020, to 2025 to cover payments for forest reversion initiated between 2016 and 2020, and to 2023 for pole planting undertaken between 2018 and 2020;
4. Aligning the schedule of payments for forestry and pole planting so both receive 70 percent of the approved grant following completion of successful establishment, and the subsequent 30 percent for forests up to year eight for thinning and for poles in the third year after establishment;
5. Enabling the grantees to certify claims for payments;
6. Introducing multi-year funding to overcome the expense transfer problem;
7. Reviewing the radiata pine regime with the possibility of including a cheaper, lower stocking and one thinning alternative, and considering whether any additional species and regimes may be appropriately included;
8. Introducing a mechanism for considering late applications for planting that would proceed that year and utilise unallocated funding;
9. Recording and monitoring the costs of administration of the ECFP, and evaluating these against the administration costs of the AGS.

Sustainable Land Management (Hill Country Erosion) Programme

The Sustainable Land Management (Hill Country Erosion) Programme (HCEP) is focused on the mitigation of soil erosion on the hill country of the mid and lower North Island through change in land management. It operates as a partnership among central Government, four regional councils and associated landowners, and has been described as a ten year programme.

Cabinet agreed goal / objectives

The Review Panel has not been provided with a Cabinet minute that states Government's agreed goal and/or objective/s for the HCEP, other than a paper to the Cabinet Policy Committee (POL (07) 388) that noted that the objective of the HCEP is:

...to produce a long-term shift in management practises on erosion-prone hill country, particularly focusing on increasing protection planting on highly erosion-prone land through local government initiatives.

MAF's stated goal is "...to increase the rate of protection of North Island hill country pasture with a severe or extreme erosion risk" (see page 28 of *Review of MAF afforestation schemes discussion document 2010*¹⁰). MAF advised the Review Panel that the Government's objectives for the programme were:

- Improved protection of land, agricultural capacity and infrastructure;
- Mitigation of the flooding risk for down stream communities and properties;
- A stronger focus on protection and prevention by land owners and agencies rather than recovery.

The Review Panel has not seen references to the MAF stated goal or objectives in any Cabinet minute that has been provided.

However, Cabinet did note (CAB Min (07) 39/4A):

...that the SLM (Hill Country Erosion) Programme is now in place, provides a tool for leading change in land management practice and consists of:

- A contestable fund for regional council initiatives;
- Capacity building initiatives;
- Catchment facilitation;
- A science stock take and erosion modelling.

Cabinet also agreed to criteria for determining central Government's response to local government sustainable land management issues (CAB Min (06) 37/4). These criteria are:

- I. The problem is significant and is considered beyond the scope of the local authority because it:

¹⁰ Ministry of Agriculture and Forestry, 2010. *Review of MAF Afforestation Schemes discussion document 2010*, Ministry of Agriculture and Forestry, Wellington, December 2010.

- a. has significant national effects (positive or negative); or
- b. requires solutions at a multi-regional scale; or
- c. the problem affects an area of national significance (i.e. people outside the region place a significant value or receive significant benefit from the resource);

OR

- II. The problem may currently (or may in the near future) be beyond the capacity of local government because:
 - a. the sheer scale of the problem when considered on a total catchment basis exceeds the resources of the council;
 - b. the region lacks the income from its rating base, or other assets or cannot prioritise resources to address the problem and carry out its other functions;
 - c. the problem is longstanding and was inherited by the regional council at the time of its establishment and it is therefore at a disadvantage compared with other regions.

AND

- III. The problem must be quantified in environmental and economic terms. The costs and benefits of the proposal need to be clearly described to enable a balanced judgment of whether the proposal is rational to fund from an economic perspective.

AND

- IV. The proposed solution is consistent with achieving Government's desired SLM outcomes.

Government's desired SLM outcomes identified in the Minister's paper to the Cabinet Business Committee (CBC (06) 260)) are:

- Maintenance of the potential of New Zealand's soils for a range of uses for present and future generations;
- The adoption of land management skills and the application of appropriate technologies to enable individuals and communities to provide for their social and economic well-being;
- The avoidance, mitigation, and remediation of the impacts of land-related hazards, including flooding, subsidence and erosion;
- The maintenance of catchments to provide high quality water resources for downstream users and for users of coastal spaces (intertidal areas, seabed, water); and
- Protection of communities and infrastructure.

The Minister's paper states these are "...as described in *Sustainable Land Management: A Strategy for New Zealand, 1996*."¹¹ The Review Panel notes that they are a selection of some of the desired outcomes from that publication, plus an additional outcome in the form of the last bullet point.

¹¹ Ministry for the Environment, 1996. *Sustainable Land Management – A Strategy for New Zealand*, Ministry for the Environment, Wellington.

Achievements with respect to goal / objectives

The Review Panel is concerned that there appears to be no official record available of Government's stated goal and/or objectives for developing, funding and implementing the HCEP, and is wary of evaluating performance and drawing conclusions in the absence of this information. The sustainable land management outcomes identified above are high level and not specific to the HCEP.

In addition, three of the four regional councils have completed only one year of their eight year projects under the HCEP. The Review Panel considers it premature to be assessing their performances. The other regional council, which has completed four years of its programme, has been subject to a detailed review that reported just over one year ago. The Review Panel has read the *Hill Country Erosion Fund Performance Validation Report: Horizons Regional Council Sustainable Land Use Initiative (SLUI)*¹², and commends its recommendations.

Overall the Review Panel considers it can do little more than make some observations about the HCEP.

Data below on costs, targets and achievements are from a MAF supplied table. The Review Panel emphasises that farm plan numbers is not a good measure of achievement. Implementation of farm plans is the measure of success.

Horizons Regional Council

Horizons Regional Council has received two four-year HCEP funding allocations of \$7.3 million in 2007/08 to support their Sustainable Land Use Initiative (SLUI), and \$6.1 million in 2010/11 to extend the SLUI another four years.

Table 18: Targets and achievements for Horizons Regional Council for the four years to 2009/10

	Target	Actual
Whole farm plans (number)	306	294
HEL under whole farm plans (hectares)	21,840 (3 years)	40,232
HEL non-retirement work completed (hectares)	5,560	1,386
HEL retirement work completed (hectares)	4,760	3,218

Note: HEL means highly erodible land.

Greater Wellington Regional Council

In 2008/09 HCEP funding of \$525,000 was allocated to the Greater Wellington Regional Council for a catchment initiative and facilitation project. This has only been operational since 2009/10. In that year ten sustainability plans were targeted and ten completed. One hundred hectares were targeted for retirement from farming through afforestation under AGS grants with 172 hectares actually retired.

For the incomplete 2010/11 year, 36 hectares for pole planting were targeted with 48 hectares achieved, and 25 hectares were targeted for retirement with 22 hectares achieved. Fifteen sustainability plans were targeted, but data on completed plans are not available.

¹² Brown, I; Dobbs, L; Ramsden, T., 2010. *Hill Country Erosion Fund Performance Validation Report – Horizons Regional Council Sustainable Land Use Initiative (SLUI)*, unpublished report prepared for MAF Policy, April 2010.

Hawke's Bay Regional Council

HCEP funding of \$351,000 was allocated in 2008/09 (commencing in 2009/10) for the Wairoa sediment reduction initiative, and \$244,660 for the three catchment partnership groups.

Table 19: Targets and achievements for the Hawke's Bay Regional Council for 2009/10 and 2010/11 (incomplete)

	Target	Actual
Erosion control level plans (number)	13	16
Comprehensive farm plans (number)	9	4
Pole planting (hectares)	150	126
Retired from farming via AGS and reversion (hectares)	48	14

Taranaki Regional Council

In 2009/10 HCEP funding of \$1.063 million was allocated to implement farm plan recommendations in erosion prone areas. The project has only been running for one complete year. In that year 15 farm plans were proposed and 15 were completed. There was a target of 500 hectares of erosion prone land under farm plans and 2627 hectares eventuated. Some 50 hectares were targeted for retirement and 112 hectares were actually retired.

Other projects

The Gisborne District Council was allocated \$102,000 of HCEP funding in 2010/11 for soil conservation works in Waipaoa catchment, and a Willow and Poplar Research Collective was allocated \$653,000 in 2008/09 to support a willow and poplar breeding programme.

The goal of the willow and poplar breeding programme is to use interspecific hybridisation and clonal selection to develop robust willow and poplar genetic material suitable for protection of erosion prone soils, particularly on pastoral hill country slopes. Objectives concern maintaining and enhancing genetic stock, breeding new varieties, and technology transfer to regional councils and farmers.

The project is well documented on the MAF website¹³. Business and research plans have been prepared, field trials undertaken, experimental hybrid poplars have been bred and distributed to regional councils for assessment, presentations have been undertaken and articles published in the *New Zealand Tree Grower*.

Financial costs to the Crown in delivering the scheme

The HCEP is MAF base-line funded with \$2.4 million allocated per year, of which \$2.2 million are available for partnership funding of regional council initiatives to address soil erosion and \$200,000 are available for catchment facilitation groups.

MAF administration costs are additional, but (again) actual costs are not available. There are 1.4 FTEs budgeted for administration in 2010/11.

¹³ SLMHCE Project – Poplar and Willow Breeding Programme, available at <http://www.maf.govt.nz/environment-natural-resources/funding-programmes/slm-hill-country-erosion-programme/slmhce-project-poplar-and-willow-breeding-program.aspx>

Partnership funding for regional soil erosion initiatives

Funding for recent years from the Crown, regional councils and landowners for the various regional soil erosion initiatives is provided in Table 20 (sourced from regional council submissions). No information has been provided on regional council contributions to the Willow and Poplar Breeding Research Collective.

Table 20: Funding by regions and sources for HCEP soil erosion projects

Source	Greater Wellington ¹	Horizons	Taranaki ¹	Hawke's Bay
	Erosion control initiative	SLUI	Erosion support scheme	Wairoa hill country erosion control initiative
	2010/11 + 2011/12	June 2006 to June 2010	2009/10 + 2010/11	2008/09 to 2011/12
HCEP (Crown)	\$343,750	\$4,990,000	\$546,750	\$477,000 ²
AGS (Crown)	-	\$1,186,000	-	-
Regional rates	\$268,750	\$6,197,000	\$542,812	\$379,767
Landowners ³	\$115,000	\$4,325,000	\$426,376	\$389,187
Total funding	\$772,500	\$16,698,000	\$1,515,938	\$1,245,954
Crown : local ⁴	\$1 : \$1.12	\$1 : \$1.70	\$1 : \$1.77	\$1 : \$1.61

Notes:

1. Submissions from Greater Wellington and Taranaki Regional Councils provide funding profiles through to 2018/19.
2. The value in the submission has been revised after discussion with Hawke's Bay Regional Council.
3. Landowner contributions are in cash and in kind.
4. Local includes contributions from regional rates plus landowners.

Financial, environmental and social costs and benefits to the Crown, local authorities and participating landowners

Table 21: Financial, environmental and social costs and benefits

	Financial	Environmental	Social
Crown	<ul style="list-style-type: none"> • Provides part of the funding and administration cost • No direct financial returns except where AGS is used (carbon credits) 	<ul style="list-style-type: none"> • Gains in water and soil conservation values • Carbon sequestration and climate change mitigation through afforestation 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes
Regional Councils	<ul style="list-style-type: none"> • Provide parts of the funding and administration costs • No direct financial returns 	<ul style="list-style-type: none"> • Gains in water and soil conservation values 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes • Protection of downstream land and property • Stronger relationships with landowners

Table 21 (continued)

	Financial	Environmental	Social
Landowners	<ul style="list-style-type: none"> • Farm plans provided at no cost • May receive AGS or HCEP grants to fund afforestation • Potential for carbon credits from afforestation 	<ul style="list-style-type: none"> • Facilitates sustainable land use 	<ul style="list-style-type: none"> • Supports more robust (sustainable) land use outcomes • Stronger relationships with regional councils

Costs and benefits to local communities

The partnership model involves significant costs to local communities through ratepayer funding (up to about one-third of project costs). The downstream benefits of reduced sedimentation and improved water quality from on-farm initiatives are potentially considerable, but depend on the implementation of farm plans and total areas involved.

Implementation: costs, issues, opportunities

Costs

Costs to the Crown and funding from the HCEP partners are provided in Table 20.

The Review Panel reiterates its concerns that actual administration costs are not available for MAF afforestation schemes, including the HCEP.

Lack of Government stated goal and/or objective/s

It is of concern that MAF does not have the Cabinet minute that establishes the goal and/or objective/s for the HCEP, assuming such a Cabinet minute exists. MAF appears to have developed its own goal and objectives, which are variations on the objective referred to in a paper to Cabinet noted in the discussion on Cabinet agreed goal / objectives (page 57).

If such a Cabinet minute does not exist or can not be located, and the HCEP continues in its current form, then the Review Panel suggests that the Minister of Agriculture develops objectives that clearly state what the Government is seeking to achieve through the HCEP. Currently the HCEP is being administered without the guidance provided by Government agreed objectives. However, the Review Panel recommends a new national Soil Erosion Forestry Initiative with its own objectives.

A ten-year initiative

MAF and regional councils have referred to the HCEP as a long term (ten-year) initiative. While this is not stated in Cabinet papers relating to the development of the HCEP, CAB Min (07) 12/1(2) concerning the 2007 Budget Package: Vote Agriculture and Forestry, records long-term funding for Initiative No: 4148 Sustainable Land Management Programme.

Focus on the mid and lower North Island

The Cabinet minutes concerning Government's sustainable land management and soil erosion initiatives that have been viewed by the Review Panel do not restrict coverage to the mid and lower North Island. They refer to land outside of the Gisborne District (which has the ECFP in operation). While not denying the extent and severity of soil erosion in the mid and lower North Island, other regions suffer the same issue. It is the Review Panel's belief that there should be a national initiative to address soil erosion in any region. (See under Future Roles, pages 64-66).

Free farm plans and voluntary implementation

Farm plans appear to be a good product for facilitating and targeting land use change. There is no charge to the landowner for regional councils preparing farm plans. The Horizons Regional Council plans are the most sophisticated and cost between \$8,000 and \$10,000 each. In other regions the plans are less expensive. The issue is whether a charge to recover part of the cost is appropriate? The issue is compounded by the fact that implementation of farm plans is voluntary.

The Review Panel considers that it is not appropriate for taxpayers and ratepayers to totally fund farm plans when the landowners are under no obligation to implement any parts of those plans. There are options to address this situation that include partial cost recovery (recommended in the *Hill Country Erosion Fund Performance Validation Report: Horizons Regional Council Sustainable Land Use Initiative (SLUI)*¹⁴), a landowner bond that may be refunded as implementation progresses, and regulations that require implementation at some level or over some period of time. (See below under Roles of incentives and regulations in achieving land use change).

The Review Panel considers that a part charge for farm plans would be appropriate, and that HCEP funding for land use change should be delivered with an element of regulation through regional plans.

Roles of incentives and regulations in achieving land use change

While there is general acknowledgement of the problems of severe soil erosion and unsustainable land use on extensive areas of hill country land, the approach of central and local government in addressing this is focused on advice, information, and forestry and tree planting grants. With the exception of Gisborne District Council, there is little in the way of inducement of land use change through national policies and standards, or policies and rules in regional and district plans prepared under the Resource Management Act 1991. The approach has been referred to as “all carrot and no stick”, and reflects ongoing policy tolerance of unsustainable land management by central and local governments.

The Review Panel has concerns arising from this approach. Firstly, the costs of the financial incentives fall totally on taxpayers and/or ratepayers without any obligations being placed on the landowners. Secondly, the approach runs the risk of generating a culture of expectation of financial incentives before landowners contemplate land use change.

There is an important role for financial incentives to encourage land use change (see Appendix Two), but the Review Panel considers that they should be delivered in conjunction with an element of regulation. The rules in the Gisborne Combined Regional Land and District Plan associated with Overlay 3A land are an example (but not a model) of how financial incentives and regulation should operate together.

One of the outcomes of policy tolerance of unsustainable land use is high land values i.e. values that do not reflect sustainable use. The Review Panel understands that high hill country land values are the biggest impediment to investment by the private sector in new forest planting.

The AGS

Implementation of the afforestation component of farm plans is heavily reliant on the regional grant pool of the AGS, which has a focus on the mitigation of soil erosion. Funding for the AGS

¹⁴ Brown, I; Dobbs, L; Ramsden, T., 2010. *Hill Country Erosion Fund Performance Validation Report – Horizons Regional Council Sustainable Land Use Initiative (SLUI)*, unpublished report prepared for MAF Policy, April 2010.

concludes in 2012/13. Without new Crown funding to extend the role of the regional pool of the AGS there will be a significant impact on the effectiveness of the HCEP. It is difficult to see the ETS (Forestry) covering this role in the short-term, at least.

Five hectare limitation for HCEP funded afforestation

Regional council submissions have highlighted the afforestation constraints imposed by the five hectare limit under HCEP funding. This limitation would not exist in the new soil erosion initiative proposed under Future Roles (pages 64-66).

Alignment with other schemes (duplication, omissions, misalignments)

The relationship between the HCEP and the ECFP is addressed in the discussion on the ECFP (see page 54). The HCEP uses the AGS (regional pool) as the main mechanism to fund afforestation.

Appendix One provides more detail on comparisons among the schemes.

Cost effectiveness

The Panel's observations suggest that the purpose for the HCEP is around leading change in land management practice to address hill country erosion beyond the Gisborne District, but not necessarily in just the mid and lower North Island.

Farm plans are the main delivery mechanism and are conceptually excellent for targeting severe soil erosion, grant allocation and land use change. Their preparation at no cost to the landowner and with no implementation requirements seems overly generous with the potential for taxpayer and ratepayer funding to be spent with no, or limited, return.

Cost effectiveness of the HCEP can not be assessed in terms of annual target numbers for farm plans versus numbers achieved (although generally annual targets have been achieved). Cost effectiveness must be considered against numbers of plans and levels of implementation. However, it is not feasible for the Review Panel to evaluate cost effectiveness as Taranaki, Greater Wellington and Hawke's Bay regional councils have only completed their first years of eight-year programmes under the HCEP, while Horizons Regional Council has completed four years of an eight year programme and has already been subject to a recent and detailed review. The first years of operation inevitably involve set up costs and problem resolution that (hopefully) do not occur in subsequent years.

Recognising this situation the Review Panel notes that to date:

- The target number of farm plans is 1038 and 336 have been prepared; and
- The target area for land under treatment is 33 535 hectares and 5007 hectares have been treated.

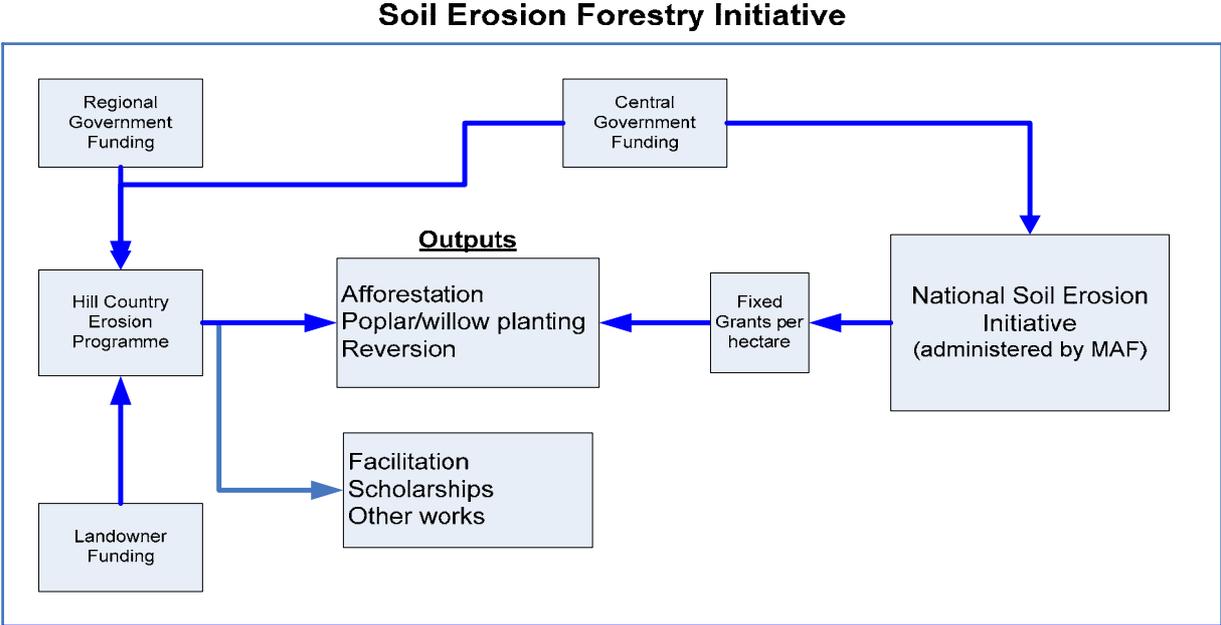
All regional councils have focused on priority catchments. (Greater Wellington - five catchments in the Waiararapa; Taranaki - STRESS which is focused on the Waitotara catchment; Hawke's Bay - five catchments in the Wairoa area; Horizons through farm plan preparation targets).

Future roles (continuation, merging, abandoning)

The partnership approach of the HCEP with central Government, regional government and landowners working together to address one of New Zealand's most critical environmental issues, soil erosion, is excellent. The Review Panel considers that there is scope to integrate this with

implementation strategies from the ECFP to form a Soil Erosion Forestry Initiative. The structure of this Initiative is outlined in the diagram below.

Diagram 2:



The purpose of this national initiative could be simply stated as mitigating severe and extreme, or potentially severe and extreme, soil erosion through land use change. It would operate through the HCEP partnership approach involving central Government, regional government and landowners.

Central Government would:

- Work with its partners in developing policies and procedures;
- Fund the “regional pool” which would provide grants for soil conservation by facilitating afforestation, reversion and the planting of poplars and willows (essentially taking the role of the current AGS regional pool);
- Administer the “regional pool” and allocation panel;
- Manage budgets and finance;
- Contribute contestable funding to the “HCEP” for catchment facilitation and capacity building initiatives (a continuation of the current HCEP approach);

Regional government would:

- Work with its partners in developing policies and procedures;
- Contribute funding to the “HCEP” for catchment facilitation and capacity building initiatives within their regions (a continuation of the current HCEP approach);
- Recruit land for grants from the regional pool for afforestation, reversion and pole planting;
- Rank applications on soil conservation benefits;
- Participate on the allocation panel for regional pool grants;
- Prepare farm plans;
- Undertake other regional catchment facilitation initiatives within their regions;
- Introduce a level of regulation under regional plans (see for example, Gisborne District Council’s Overlay 3A rules).

Landowners would:

- Work with their partners in developing policies and procedures;
- Contribute funding (cash and in-kind) to the “HCEP” for catchment facilitation and capacity building initiatives within their regions (a continuation of the current HCEP approach);
- Implement farm plans;
- Receive grants for afforestation, reversion and pole planting;
- Opt to join the PFSI or ETS (Forestry) at any time.

The “regional pool” would be for soil conservation purposes only, with administration based on the ECFP model. The value of the fixed afforestation grant would be based on the ECFP top-up approach i.e. the amount necessary to establish commercial forests. The grant forests would be eligible to participate in the PFSI, the ETS (Forestry) or the new AGS (carbon) on the basis of separate services justifying separate payments i.e. the Crown would not receive carbon credits for an initial agreement period. The value of the grant would be adjusted annually to balance demand with funding supply.

The Review Panel is aware of the constraints on new Government funding. However, without new funding to cover the role currently filled by the AGS regional pool (where funding ends in 2012/13), New Zealand’s soil erosion mitigation initiatives beyond the Gisborne District will be severely impacted.

Other issues

The magnitude of this review which covers four forestry schemes has been such that the Review Panel has not been able to address all the issues that have been raised. One such issue that relates to the HCEP and the Review Panel deem potentially relevant is listed below:

- Developing and promoting the concept of managed retirement land under short term leases where loss of income is covered until revenue is available from carbon (e.g. payment of \$10/ha/yr for 10 years).

Recommendations

In addition to the HCEP, the recommendations below refer to that part of option 3 for the AGS that concerns soil erosion (see page 44).

The Review Panel recommends:

At the national level -

1. Redeveloping the HCEP into a national soil erosion forestry initiative (see pages 64 to 66);
2. Providing new funding for soil conservation through afforestation, reversion and pole planting (essentially continuing the role of the current AGS regional pool);
3. Administering the regional pool and grant allocation panel;
4. Managing budgets and finance;
5. Contributing contestable funding for catchment facilitation and capacity building initiatives (a continuation of the current HCEP approach);
6. Encouraging regional councils to introduce regulations to operate alongside financial incentives;
7. Recording and monitoring the costs of administration.

At the regional level -

8. Continuing to prepare farm plans, but with a part charge to landowners;
9. Recruiting land for grants for afforestation, reversion and pole planting;
10. Ranking applications on the basis of soil conservation benefits;
11. Participating on the grant allocation panel;
12. Contributing contestable funding for catchment facilitation and capacity building initiatives (a continuation of the current HCEP approach);
13. Developing regulations to operate alongside incentives to address soil erosion and land use change (noting the example of the rules in the Gisborne Combined Regional Land and District Plan associated with Overlay 3A land).

Appendix One: Comparisons Among Existing Schemes

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Government's motivations	To sequester carbon, mitigate climate change and meet Kyoto Protocol commitments	To sequester carbon, mitigate climate change and impacts of climate change, and meet Kyoto Protocol commitments	Sustainable land management	Sustainable land management
Government's stated goal/s or objective/s	A mechanism to allow landowners to access the value of carbon sequestered on land through the establishment of forest sink covenants	To provide an alternative mechanism (to the ETS) with lower transaction costs that allows landowners to recognise the climate change mitigation benefits of afforestation To establish new Kyoto-compliant forests in areas that will assist with reducing the expected impacts of climate change and generate other environmental benefits To create additional Kyoto sink credits at least cost to the crown	Sustainable land management, targeting the worst 60 000 hectares of severely eroding land in the Gisborne District.	No copy of Government's stated goals or objective/s available. MAF stated goal is to increase the rate of protection on North Island hill country pasture with severe or extreme erosion risks
Activities	The establishment of Kyoto-compliant forests through regeneration or planting	The establishment of Kyoto-compliant forests through regeneration or planting.	Sustainable land management through afforestation, reversion or pole planting Providing information to owners of eroding land Commissioning research on soil conservation issues Working with the GDC on SHC project	Sustainable land management through afforestation, reversion, retirement or pole planting Initiatives that: <ul style="list-style-type: none"> • support catchment facilitation groups • plan or implement erosion protection programmes • educate owners of hill country land • deliver capacity building – local govt land managers

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Grants	No grants	Grants to individuals, business entities and local government provided they own the land or have right to use the land for forestry Average grant for public pool = \$1,700/ha and for regional pool = \$2,100/ ha	Grants to landowners or entities that have an interest in the target land. Grants range from \$1,476 to \$2,280/ha for afforestation, \$1,512 for reversion, actual and reasonable for pole planting	Grants to regional council's for regional initiatives for up to four year contracts. Grants levels dependent on contributions from regional councils and landowners (partnership approach). Grants for afforestation through AGS and HCEP Horizon's contract states that provision of any Government funded investment into joint venture forestry is to be reinvested in catchment related projects
Carbon credits	All carbon credits to the landowner	First ten years of carbon credits to the Crown then landowners can enter PFSI (or ETS)	Can enter the PFSI (or ETS with possible post-2007 part grant repayment)	AGS carbon credit conditions apply for AGS grantees HCEP grantees can enter the PFSI, but not the ETS
Cost recovery	Legislation requires that all reasonable steps be taken to recover administration costs that are not provided for by money appropriated by Parliament Current policy recovers only very small percentage of direct administration costs	No administration costs are recovered by MAF from landowners but 10 years of carbon credits go the Crown so may achieve fiscal neutrality No administration cost are recovered by regional councils from landowners Regional councils recover part of their administration costs from MAF	No administration costs recovered by MAF from landowners	No administration costs recovered by MAF Regional councils recover part of their administration costs from MAF No cost recovery from landowners

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Delivery mechanism/s	50-year covenant registered against land title 99 year harvesting restriction (while covenant applies)	Ten year agreement with the Crown that transfers to purchaser if the land is sold	50-year covenant registered against land title Grant approval certificate Regional Plan rules for Overlay 3A land	Farm plans with voluntary implementation Councils arrange Memorandums of Understanding or Encumbrance AGS and associated mechanism
Harvesting	Restricted to continuous canopy forest management	After ten years no restrictions on management options	Forests intended to be harvested but may not be economic on some sites Replanting required	AGS conditions apply HCEP grantees conditions depend on MOU
Benefits to landowners	Assists landowners to recover the costs of afforestation or reversion through carbon credits and limited timber Ability to earn carbon credits (AAUs) for net forest carbon sequestration (only credible source for voluntary market) AAUs more tradable than NZUs and potentially more valuable Accommodates indigenous reversion better than the AGS	Assists landowners to fund afforestation or reversion for future timber, carbon credits and/or soil erosion Mitigates landowner cash flow issues Landowners able to join PFSI or ETS after ten years	Assists landowners to fund afforestation, reversion or pole planting for timber and to mitigate soil erosion Mitigates landowner cash flow issues Landowners can join PFSI or ETS but if post-2007 grantee may have to refund part of grant Assists landowners to comply with the Gisborne Regional Plan requirement of having effective tree cover on Overlay 3A land	Assists landowners to fund afforestation, reversion or pole planting to mitigate soil erosion and for timber Mitigates landowner cash flow issues Landowners using AGS grants able to join PFSI or ETS after ten years Free farm plans with voluntary implementation Financial assistance for protection programmes and catchment facilitation

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Benefits to the Crown / local government	Mitigation of anthropogenic climate change Benefits relating to biodiversity, soil erosion, water quality	Mitigation of anthropogenic climate change Benefits relating to soil erosion, water quality and biodiversity First ten years of carbon credits	Benefits relating to carbon sequestration, climate change, water quality and biodiversity	Benefits relating to carbon sequestration, climate change, water quality and biodiversity
Inter-relationships	PFSI landowners can be ECFP grantees PFSI landowners not eligible for AGS grants	AGS landowners can join the PFSI after ten years AGS landowners not eligible for ECFP grants Key delivery mechanism for afforestation under the HCEP	ECFP landowners can join the PFSI ECFP mutually exclusive to HCEP ECFP landowners not eligible for AGS grants	Landowners can join the PFSI if not AGS grantees ECFP mutually exclusive to HCEP HCEP uses AGS as main delivery mechanism for afforestation
Relationships with the ETS	PFSI and ETS are mutually exclusive PFSI delivered under Forests Act and ETS under Climate Change Response Act PFSI inconsistent with ETS re some administrative systems Common technical provisions such as definitions, carbon assessment	AGS landowners can enter the ETS after 10 years	ECFP landowners can join the ETS with possible part refund of grant if post-2007 grantee	Where AGS is used landowners can enter the ETS after 10 years Areas retired under HCEP can enter ETS Areas afforested under HCEP can not enter ETS

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Monitoring	On-going enforcement of the covenant Shape files on all forest areas once established	Shape files on all forest areas once established Site visit a minimum of 6 weeks after planting is required Further monitoring during the 10-year term	Shape files on all forest areas once established Site visits to ensure establishment Further checks at thinning	Shape files on all forest areas established once established AGS provisions apply where for AGS grantees
Restrictions relating to land ownership	Covenants can only be held by a landowner	Regional councils and landowners can not have joint venture agreements from the regional pool (grantor / grantee)	All land ownerships are eligible Owner must maintain erosion control effectiveness	HCE Fund only relates to defined land areas under regional council initiatives approved through applications to the fund
Other differences between schemes	Differences with AGS: <ul style="list-style-type: none"> • permanency • covenants v agreements • immediate credits v grants • AAUs v NZUs • covenants v register of participants 	See PFSI First ten years of carbon credits to the Crown for soil erosion mitigation v no carbon credits to the Crown under ECFP for mitigation of soil erosion Contracts for AGS soil erosion grants v covenants under ECFP for soil erosion grants	Does not require farm plans as per HCEP but does require covenants No carbon credits to the Crown for soil erosion mitigation v ten years of credits to the Crown under the AGS for soil erosion mitigation Grants combined with regulation under regional plan v no regulation under the HCEP Covenants for soil erosion grants v contracts under AGS for soil erosion grants Has a different specification for initial and final stockings compared to the AGS and HCEP	Requires farm plans before grants can be made v covenants for the ECFP Grants with no regulation under regional plans v ECFP with grants and regulation

Key Point	Permanent Forest Sink Initiative	Afforestation Grant Scheme	East Coast Forestry Project	Hill Country Erosion Programme
Other duplications between schemes			Dual covenants required if ECFP forests also enter PFSI	HCEP and AGS regional pool both fund afforestation for soil erosion, although former limited to less than five hectares and latter to five hectares or more
Lead agency	MAF	MAF	MAF	MAF
Partners	Landowners	Ten regional councils re the regional pool Landowners	Gisborne District Council Landowners	Horizons, Taranaki, Greater Wellington and Hawke's Bay Regional Councils Landowners

Appendix Two: The Roles of Government Incentive Schemes in Resource Management

Incentive schemes are used to address market failures that arise from the generation of environmental externalities (soil erosion, water quality, biodiversity, carbon emissions) through facilitating land use change. Another way of considering these environmental externalities is “policy tolerance” by governments of unsustainable land uses, with consequential impacts on land values that do not reflect the costs of the environmental externalities.

Incentive schemes can also address market failures where public good benefits to NZ Inc. are otherwise provided free of charge by landowners, and can assist mitigate cash flow issues from existing, unsustainable resource use that inhibit the change to sustainable resource use.

It is important to avoid direct financial incentives (grants) being capitalised into land values. It is also important to avoid developing a culture where landowners have an expectation of financial incentives to change land use.

However, (financial) incentives are only one side of the equation for achieving land use change: regulations are the other side. There is a case generally in New Zealand for a stronger focus on regulation in the balance between incentives and regulation to address environmental externalities. (The Resource Management Act has a laudable purpose, but implementation has been weak).

The value of any (financial) incentive should reflect the value of the service purchased, or the cost of transitioning to the new (sustainable) land use where the value of the service can not be readily established e.g. mitigation of soil erosion.

Information and education also have important roles in facilitating land use change.

Forestry context

Forestry incentive schemes in New Zealand have a long history dating back to 1858. They have (arguably) had limited success in attaining their (original) goals.

Significant levels of annual afforestation have only been delivered when there has been a robust commercial plantation forest industry. Grant schemes are only likely to deliver low levels of new forest planting or regeneration.

New commercial forest establishment in New Zealand is constrained by the price of hill country land which is kept high by the policy tolerance of unsustainable land uses and their environmental externalities.

Appendix Three: The ETS (Forestry)

This review is being undertaken in the context of the ETS (Forestry) being operational. New Zealand's Fifth National Communication under the UNFCCC¹⁵ commented:

The ETS is the main policy instrument to encourage afforestation and reduce deforestation. In addition to the ETS, New Zealand has three major schemes that promote afforestation and provide incentives to maintain forests: the East Coast Forestry Project, the Afforestation Grant Scheme, and the Permanent Forest Sink Initiative.

The first three years (to 2010) of the New Zealand ETS (Forestry) appear to have motivated little new planting, and a significant period of domestic and international policy stability (and attractive carbon prices) are likely to be needed for the ETS (Forestry) to stimulate significant investment in afforestation. Although the Government has stated that it is committed to the continuation of an ETS in New Zealand, the current review, the ongoing uncertainty over a future international agreement and the postponement of the entry date for the agriculture sector, inevitably create an environment of local uncertainty. A future international agreement that operates post the Kyoto Protocol's first Commitment Period also seems highly uncertain.

Uncertainty extends to the international price of carbon with analysts predicting both price rise and price collapse.

Carbon price (theoretically) impacts on investment through the ETS (Forestry), and greater commercial investment (afforestation) driven by the ETS (Forestry) may reduce Government's need/desire to operate other afforestation schemes.

Manley and Maclaren (2009)¹⁶ model impacts of carbon price on:

- Internal rates of return (IRR) for radiata pine regimes, which range from around 4-5 percent for carbon = \$0 per tonne to 12-17 percent for carbon = \$50 per tonne (with land cost of \$6,000 per hectare);
- Land expectation values (LEV) for radiata pine regimes, Douglas fir and *Eucalyptus nitens*, which range from close to \$0 per hectare at carbon = \$0 per tonne to \$5,000-\$18,000 per hectare for carbon = \$50 per tonne (at 8 percent real rate of return).

Horgan (2007)¹⁷ models estimated areas of new commercial forest planting against IRR and suggests at an IRR of less than seven percent there is little or no new planting, and at an IRR of ten percent there may be 80 000 hectares per year.

If the Government's objective is to have 30 000 hectares of new planting per year by 2020¹⁸, then Horgan's model suggests an IRR of around eight percent might deliver this target. For radiata pine, a carbon price in the mid-\$20s (or higher) might achieve the eight percent IRR (or greater)

¹⁵ Ministry for the Environment, 2009. *New Zealand's Fifth National Communication Under the United Nations Framework Convention on Climate Change Including the Report on the Global Climate Observing System*, available at: <http://www.mfe.govt.nz/publications/climate/nz-fifth-national-communication/index.html>

¹⁶ Manley, Bruce; Maclaren, Piers, 2009. *Modelling the impact of carbon trading legislation on New Zealand's plantation estate*, NZ Journal of Forestry, May 2009: 39-44. NZ Institute of Forestry, Rotorua.

¹⁷ Horgan, G. 2007. *Financial returns and forestry planting rates*, available on page 116 at www.maf.govt.nz/news-resources/publications.aspx?dnn-ctr4418 PublicationsSearch-searchResultsRadGridChangePage=116

¹⁸ John Key, Prime Minister, opening address at ForestWood 2010 Conference, Wellington, 12 October 2010.

under the ETS (Forestry), assuming investor confidence in the ETS (Forestry) which may not exist at this time.

Appendix Four: Review Panel

The Panel that reviewed the MAF afforestation schemes comprised:

Professor Anton Meister	ADM Consulting Ltd
Glen Katu	Maraeroa C Incorporation
Piers Maclaren	Piers Maclaren & Associates Ltd
Peter Gorman	MAF
John Novis	MAF

Appendix Five: Review Scope and Terms of Reference

Scope

This review of MAF administered afforestation schemes involves the:

- Permanent Forest Sink Initiative (PFSI);
- Afforestation Grant Scheme (AGS);
- East Coast Forestry Project (ECFP); and the
- Sustainable Land Management (Hill Country Erosion) Programme (HCEP).

With regard to the ECFP, the review will only address cost-effectiveness, implementation issues and opportunities, and the inter-actions with the other forestry schemes. The review will not consider the policy supporting the ECFP, its objectives or its continuation. The findings and recommendations of the afforestation review pertaining to the East Coast Forest Project will be considered by the Crown when it decides on any future action to address major erosion issues on the East Coast under the Ngati Porou–Crown Relationship Accord.

The review does not include the Emissions Trading Scheme (ETS), other than in the context of considering whether the PFSI, AGS and HCEP are still needed in their current forms given the ETS and whether any statutory alignment issues exist with the ETS.

The PFSI and the AGS are components of Government’s climate change policy. The ECFP and the HCEP are components of Government’s sustainable land management policy. The reviewers are to consider the schemes under these two groupings, as well as a combined package.

The review will cover policy for the PFSI, AGS and HCEP, and implementation and operational aspects of all four afforestation schemes.

Maori interests

The terms of reference provide for Maori stakeholders, including iwi, to raise with the reviewers any issues of concern, including impacts on landowners and barriers to participation, and any opportunities associated with the schemes. Key Maori stakeholders who must be consulted are identified.

Carbon trading scenarios

The review of afforestation schemes shall be undertaken in the context of three carbon trading scenarios. The first scenario will assume a status-quo trading environment where the price of carbon is \$NZ 25 per tonne of CO₂, while the other scenarios will assume carbon prices of \$NZ 10 and \$NZ 50 per tonne of CO₂.

Terms of reference

The objectives for the review are to establish the levels of effectiveness and cost-efficiency in the delivery of each scheme, improvements that are warranted and to identify their future roles (with the exception of the ECFP) in contributing to sustainable land management and climate change policy objectives.

The reviewers will use information available from MAF, consult with scheme administrators and stakeholders (including those listed below under “Consultation”), and consider public submissions (to be sought by MAF), to:

- (a) Critically examine the performance of PFSI, AGS and HCEP against their policies and/or objectives, against co-benefits such as mitigation of soil erosion, carbon sequestration, indigenous biodiversity and protection of water quality as appropriate, and against other relevant Government policy.
- (b) Critically examine the performance of the four schemes with respect to:
 - level of uptake;
 - financial, environmental and social benefits and adverse impacts, if any, to the Crown and to participating landowners;
 - financial costs to the Crown in administering the scheme and to landowners in participating in the scheme.
- (c) Consider the benefits and costs to local communities, if any, arising from the four schemes, and whether they are reflected in the funding and/or delivery of the schemes.
- (d) Document key issues and opportunities for the Crown in administering the four schemes and for participating landowners, including impacts on landowners and barriers to participation, recommend actions to address these issues and opportunities (which may be in the context of (f) below), and identify any significant risks associated with the actions.
- (e) Identify areas of duplication, omission or misalignment, if any, among the schemes¹⁹ and recommend actions to address these (which may be in the context of (f) below).
- (f) Critically examine the merits of the PFSI, AGS and HCEP continuing to operate independently, merging these schemes, improving scheme design and implementation, cancelling these schemes in light of the ETS or cancelling these schemes because they fail to deliver effective outcomes, and consider statutory alignment issues with the ETS for schemes that should continue (including the ECFP).
- (g) Recommend future options for the PFSI, AGS and HCEP and how these options might best be implemented.
- (h) Present a draft report to MAF by 31 March 2011 for their comment, and a final report for the Minister of Forestry and the Minister for Climate Change Issues by 20 May 2011.

Consultation

Consultation with stakeholders and Iwi will include the NZ Forest Owners’ Association, NZ Institute of Forestry, NZ Farm Forestry Association, Iwi Leaders Group (Climate Change) and their advisors, Federation of Maori Authorities, Regional Affairs Committee of Local Government NZ, Local Government NZ, Sustainability Council, Federated Farmers and key environmental interest groups.

Te Runanga o Ngati Porou will be consulted recognising that the ECFP covers the Waiapu catchment and erosion in the Waiapu catchment is an important issue to Ngati Porou.

¹⁹ MAF Policy has undertaken a project comparing the four schemes and this will be available to the reviewers.

Appendix Six: Submitters

Written submissions were received from:

Gisborne District Council
Kohi Lands Ltd
Maori Trustee
Tunakino Forestry Ltd
Fraser Forestry Partnership
Lansdowne Forestry Ltd
P F Olsen Ltd
Tane's Tree Trust
Graham Usher
Landcare Research
Northland Regional Council
Wellington City Council
Craigmore Forestry Ltd
Hawkes Bay Regional Council
Forest Owners Association
Christchurch City Council
Greater Wellington Regional Council
Regional Council AGS Allocation Panel
Property & Land Management Services Ltd
Auckland Council
Horizons Regional Council
Ingleby Company NZ
Forest Carbon Group
Sumitomo Corporation
Permanent Forests International Limited
Environment Waikato
Taranaki Regional Council
Fonterra
Catherine Delahunty
ChanceryGreen
NZ Institute of Forestry
Clive Anstey
Sustainability Council
Jon Spencer
Ecologic Foundation
DTS Riddiford
FoMA
Hardwood management
ERA Ecosystem Restoration Associates
Grondalen Trust
Greenpeace
Beyond Carbon Ltd
NZ Native Forests Restoration Trust
Wood-Mizer NZ Ltd
Private + Southern Clams
Carbon One Ltd
OMFinancial
Robin and Ainslie Green
Heritage Forestry Lawrence Ltd
Regional Land Managers
Neil Walker
Gisborne Branch, Farm Forestry Association

