



DYNAMIX

Decoupling growth from resource use
and environmental impacts

DYNAMIX policy mix evaluation



Sustainable use of forests and wood in
Finland and world wide

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1 Resource/Issue

Name of resource targeted (or focus of the case study, if the policy mix is broader than the specific resource(s) we have decided to analyse).

The case study focuses on forests and the different uses of wood as a resource: pulp and paper, wood products and bioenergy. As wood is a renewable resource, the main issue is ensuring that forests are managed sustainably and that EU wood consumption does not lead to deforestation, degradation of ecosystems and loss of biodiversity in the EU and globally.

This case study focuses on the policies that were put in place to enhance and secure the sustainable supply of wood. Forests provide many other ecosystem services other than the provision of wood, but these other functions are not the focus of this study. In other words, this case study focuses on how wood is supplied to the economy and is not concerned with other issues such as deforestation due to agricultural and artificial land change or with forest areas that are not used to produce wood.

2 Geographical area of policy mix coverage

Country name, and region or city if appropriate (if policy mix is applied regionally or locally)

As wood is an internationally traded commodity, the EU demand of wood is partly supplied by imports from other countries. This case study therefore considers wood produced in the EU as well as imported from countries outside the EU.

This case study covers policies at three levels:

- International sustainable forestry management and wood trade
- EU forestry policies
- Forestry policies in Finland

Although the policies address different issues at different stages in the product chain and at different levels of governance, they are systemically interlinked. The policies that are considered to form the policy mix in this case study are those that directly or indirectly ensure that wood biomass is produced and harvested sustainably. The temporal scope of the policy mix is the past two decades (from the 1990s).

3 Policy context

Wood is a renewable resource, but if the fellings from forests are greater than their rate of growth (i.e. increment), the resource base will be depleted (Eurostat 2011).¹ Forests need to be managed properly to ensure a secure and sustainable supply of wood in the future. Besides providing essential raw material for energy, paper and a variety of other wood products such as furniture, packaging, toys, instruments, tools and construction products,

forests also provide a wide variety of ecosystem services. If forests are not managed sustainably, there is a risk that these will degrade and will result in a loss of biodiversity and quality natural areas.

Wood is currently the most important renewable energy source in the world. Demand for bioenergy has increased in the past decade and this is expected to increase even further in the coming decades due to climate and energy policies.

3.1 Needs assessment: The environmental problem/resource challenge

What is the environmental problem/concern (consider both quantity and quality), e.g. soil erosion, excessive use of non-renewable or renewable resources and the crossing of environmental thresholds/tipping points for impact, resource scarcity concerns?

Are there any economic or social problems related to the issue and environmental problems – e.g. is there important price volatility, (risk of) unavailability of resources for the economy or society?

Who is the target group affected that have been, are or will be beneficiaries of the policy response?

Forests are key ecosystems that play a vital role for the global economy as well as the natural environment. Besides providing wood for the economy, forests also supply medicinal and cosmetic resources, and areas for outdoor recreation and cultural experiences. Forests also contribute indirectly to human well-being by providing ecosystem services such as climate regulation, water purification, flood and erosion protection (Millennium Ecosystem Assessment 2005).² Finally, forests are also important natural habitats for a wide range of animals and plants as well as some indigenous populations.

Globally forests are under threat due to deforestation – in particular logging of virgin forests and land use change (from forest to agricultural and/or built-up land). This is driven by increases in demand for food, feed, bioenergy and wood products as well as demand for land for infrastructures and urban areas.

Deforestation and degradation of forests result in a large variety of negative environmental impacts such as the destruction of wildlife habitats, biodiversity loss, disruption of the world's carbon balance (by producing GHG emission and reducing the capacity of forests to absorb and stock carbon), causing soil erosion besides the loss of all other important ecosystem services (European Commission 2008).³ Deforestation and forest degradation represent about 17 % of global greenhouse gas (GHG) emissions (UNEP 2010).⁴ Biodiversity is severely affected by the disappearance and degradation of forests – particularly in the tropics (WWF 2012b).⁵

Illegal logging is one of the main causes of unsustainable forest management and deforestation (FAO 2012).⁶ Besides contributing to deforestation, ecosystem degradation and loss of biodiversity, illegal logging involves considerable negative economic (e.g. lost revenues and foregone benefits) and social (e.g. conflicts over land use, corruption, disempowerment of local and indigenous communities) impacts (Eurostat 2011).⁷ The World Bank estimates the (global) annual market value of losses from illegal logging at over US\$10 billion (World Bank n.d.).⁸ A study prepared for the Australian government estimated that after deduction for consumer benefits, the combined net market costs (financial costs to legal

producers) and non-market (environmental and social) costs of illegal logging were estimated globally at US\$15 billion a year (Centre for International Economics 2009).⁹

In the EU, forests have expanded by a total of 3.5 million ha (the size of Belgium) in the past 10 years (between 2000 and 2010) – an increase of 2 %. Approximately 178 million hectares, or about 42 % of the EU-27 land area, are covered with forests and other wooded land (Eurostat 2012).¹⁰ While many of the forest areas in the EU are protected areas (13 %) (Eurostat 2011)¹¹ or managed sustainablyⁱ (47 %) (Gomez-Zamalloa et al. 2011),¹² certain types of forest management and forest residue removal can have an impact on the environment – in particular soil nutrient losses and biodiversity losses (Evans et al. 2010).¹³

The EU imports significant quantities of wood and wood products. In 2010 the overall import of wood was 94.8 million m³ (solid wood equivalents), of which 6.6 million m³ was raw wood and 88.2 million m³ in the form of wood products (Mantau 2012).¹⁴ The EU is a net importer of basic wood products - 2.5 million m³ of raw wood was exported. Although the EU is a net exporter of wood products – 130 million m³ of wood products are exported, the high import quantities demonstrate the demand and dependence of the EU on wood from outside the EU.

According to the WWF, between 16 – 19 % of the timber imports into the EU derive from illegal or suspicious sources (WWF 2008).¹⁵ As Russia is the largest exporter of wood, it is believed that the majority of illegal imports are from Russia. Indonesia, China and Brazil are thought to be the next most important countries exporting illegal wood into the EU.

Three-quarters of the land area in **Finland** is covered by forests: 22.8 million hectares (Metla 2011).¹⁶ This represents about 11 % of the forest area in Europe. About 10 % of all forest land in Finland is protected (Metla 2011).¹⁷ The growing stock (the volume of living trees representing the wood resource base) is increasing with about 1 % a year, which exceeds the total fellings of wood from forests. Although this would indicate that forests are managed sustainably in Finland, the number of forest species is still in decline.

Over the past 40 years until 2008, the imports to Finland of roundwood (i.e. raw wood) has increased eight-fold (FAOSTAT 2013),¹⁸ while exports of roundwood has always been less than imports and remained fairly stable in the same time period. While Finland is a net-exporter of wood products, the increase in wood consumption and production is largely based on imports. This could mean that the sustainable management of forests in Finland has been achieved by increasing imports. Furthermore as Finland imports the most of its roundwood from Russia and it is estimated that this represented about half the imported illegal wood in the EU in 2006 (WWF 2008).¹⁹

Finally, future demand for wood for bioenergy is expected to increase with the renewable energy targets. At present Finland produces over 20 % of energy from woody biomass. The increase of woody biomass is expected to come from domestic forest chips (forest residues), where the production is thought to have the greatest potential (Heinimö and Alakangas 2011).²⁰ There is however discussion and concern on the biodiversity impacts of energy wood harvesting – particularly the removal of forest residues that normally would remain in the forest (Eräjää 2012).²¹

ⁱ FSC and PEFC certified area

3.2 Policy context and policy needs

What policy challenge(s) did the problem pose and what policy challenges does it still pose?

What is the policy context related to the policy mix being evaluated? What policies have been put in place to address the issues, what policies are currently in place and which ones are already foreseen for future introduction (e.g. to address past, existing and future objectives)?

What sort of policy response did (and does) the problem call for?

The 1992 United Nations Conference on Environment and Development (the so-called 'Earth Summit') was a first step in a coordinated international agreement on global sustainable forest management (FAO 2012).²² There were disagreements on the nature of forestry problems, so only a non-legally binding statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests (the so-called 'Forest Principles') were adopted (Hunter 2009).²³ Besides the Forest Principles a specific chapter (Chapter 11) on combating deforestation was included in the voluntary Agenda 21 Action Plan. The Earth Summit led to the establishment of the Intergovernmental Panel on Forests, which was followed by the Intergovernmental Forum on Forests and, since 2000, the United Nations Forum on Forests. Several conventions with relevance to forests have been agreed upon such as the Convention on Biological Diversity (entered into force in 1993), the Framework Convention on Climate Change (entered into force in 1994) and the Convention to Combat Desertification (entered into force in 1996). To tackle the trade of endangered species including certain types of timber, CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) was agreed upon in 1973 and entered into force in 1975. CITES is a voluntary agreement where countries commit to establishing a licensing system for all import, export, re-export and introduction of certain animal and plant species.

In the EU the Ministerial Conference on the Protection of Forests in Europe (MCPFE) was established in 1990 (IIASA 2009).²⁴ It was a platform for forest policy coordination and governance. The EU Forestry Strategy was adopted in 1998 and builds upon the international efforts (European Commission 1998).²⁵ It listed the key issues in relation to forestry as:

- The development of the forestry sector as a contribution to rural development – in particular employment
- The protection and restoration of the natural environment, ecosystem services and forest heritage – including the maintenance of the social and recreational functions of forests
- The improvement of ecological, economic and social sustainable forest management
- Support for international and pan-European cooperation to protect forests at European level and globally
- The fulfilment of the targets of the Fifth Environmental Action Plan (5EAP) and the protection of forest against deforestation, forest fires and atmospheric pollution
- Promoting the role of forests as carbon storage mechanisms and wood products as carbon sinks
- Promoting the environmental virtues of wood and other forest products

- Assuring the competitiveness of the EU forest-based industries

The formulation of forest policies is the competence of Member States and a formal common EU forest policy does not exist. The EU Forest Strategy and MCPFE helps coordinate forest policies in individual Member States and provides a link between national, regional and global forest policy setting (Buszko-Briggs 2010).²⁶

Building on the EU Forest Strategy, the 2006 EU Forest Action Plan was conceived as a coordination tool for forest related activities and policies at EU level. The Action Plan has four main objectives:

- improving long-term competitiveness;
- improving and protecting the environment;
- contributing to the quality of life;
- fostering coordination and communication.

A green paper on forest protection in the EU (European Commission 2010)²⁷ states that all EU Member States have national legislation on forest management. Among the type of policy instruments used across EU countries and regions are:

- National Forest Programmes;
- Operational forestry standards;
- Inclusive and systematic National Forest Inventories (NFI);
- Land registry systems, an important tool for developing social and economic forest functions and restricting illegal conversion of forests;
- Mapping of forest functions and related planning at landscape and regional level;
- Forest management requirements, including management plans and sometimes including specific management obligations in relation to certain forest functions;
- Requirements on the production and use of propagation material;
- National action plans under the CBD or UNCCD;
- Support schemes to assist private forest owners and their associations;
- Legal provisions and incentives to reduce ownership fragmentation, sometimes coupled to incentives for co-operation among forest owners;
- Licensing regimes that make timber harvest contingent on approval by competent authorities;
- Restrictions on conversion of forest land to other uses.

To specifically address illegal logging, the EU developed the FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan in 2003 which proposed a number of measures to exclude illegal timber from markets, improve the supply of legal timber and increase the demand for wood products from legal sources.

Finally in relation to resource efficiency, there are several EU waste policies (e.g. Waste Framework Directive, Packaging and Packaging Waste and Landfill Directive) that aim to

reduce the amount of wood, paper and cardboard waste and increase reuse and recycling, which reduces the overall demand for virgin wood.

Finland passed its very first Forest Act already in 1886 to stop deforestation (Metla 2011).²⁸ It aimed to secure long-term sustainable wood production by obliging new forest to be established to replace any areas that have been felled. Since the beginning of the 20th century forest management associations were established and organised regionally to promote the profitability of forest management. In 1950, the Forest Management Association Act required local governments to provide professional advisory services and education for forest owners. In the 1960s, public funding was provided to improve forest management and productivity.

The forest sector is one of the key industries in Finland, contributing with about 4 % of the GDP (Metla 2011).²⁹ Forest industry products account for about 20 % of Finland's total exports of goods. In the 1990s, Finnish forest policy was completely reformed in line with sustainability principles – in line with international agreements and political commitments (UNECE 2001).³⁰ Ecological and social sustainability was also recognised together with economic objectives. The 1997 Forest Act maintained the main principle of the original Forest Act and introduced requirements to safeguard biological diversity. Together with the Nature Conservation Act, this defined certain habitats of special importance and presented guidelines as to how these habitats may be managed. To support these requirements, the Act on the Financing of Sustainable Forestry (1997) provided economic incentives for the maintenance of biological diversity and natural features, and for harvesting wood for energy purposes. A range of institutional acts have also been passed to support the administration, monitoring and development of the Finnish forest industry: the Act on Forestry Centres and Forestry Development Centre (1996 and updated in 2006); the Act on Forest Management Associations (1999); the Act on the Finnish Forest Research Institute (Metla) (2000) and the Act on the State Forest Enterprise Metsähallitus (2005).

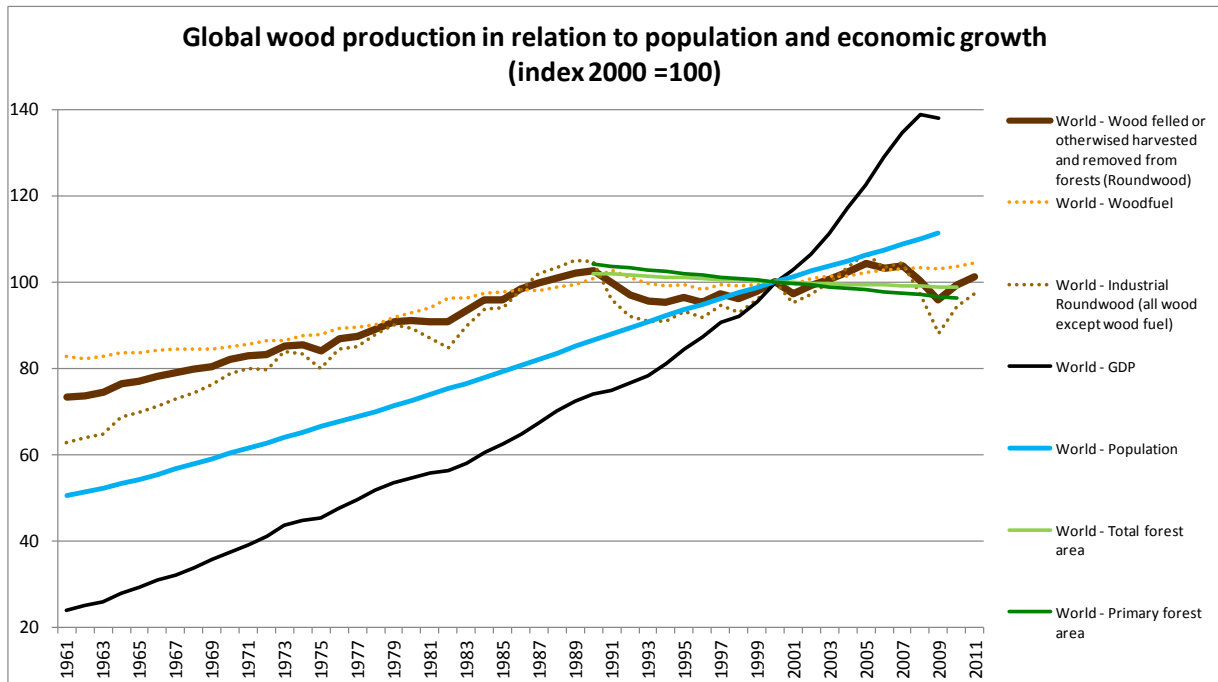
3.3 Historical performance and projections into the future: Insights on decoupling

What has been the trend vs. GDP (or other economic performance metrics, such as sectoral growth) and what type of decoupling has been achieved?

On a **global** scale, the amount of wood felled or otherwise harvested and removed from forests has been correlated with population growth and GDP, but since 1990 this has remained stable and thereby seems to demonstrate relative decoupling (see Figure 1). Deforestation and forest cover loss still continues however as the total forest area (including primary forest) is decreasing. Although annual deforestation rates are decreasing, they still remain alarmingly high – particularly in some world regions (FAO 2012).³¹ Therefore we can at best only describe the trend that population and economic growth is being relatively decoupled from deforestation.

Since 2000 the amount of wood fuel has been growing after stagnation between 1990 and 2000. Despite decreasing areas for forests, wood production has remained fairly stable, indicating that global average yields have increased.

Figure 1: Global forest and wood production trends, 1961-2011



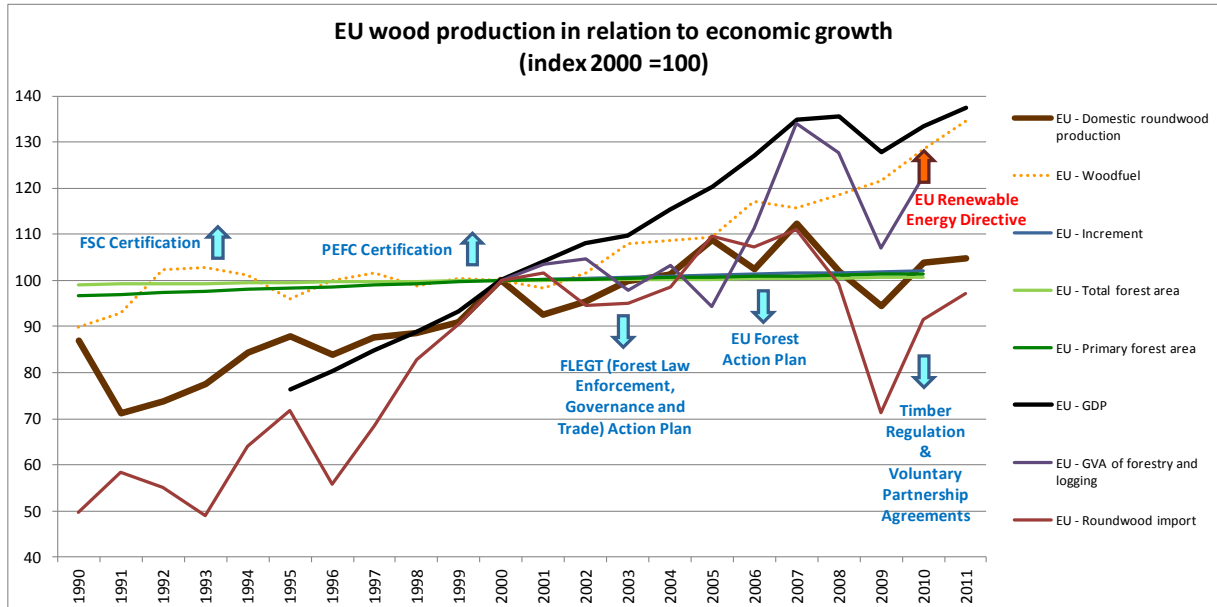
Source: FAOSTAT. 2013. "ForesSTAT"; and Krausmann, F., et al. 2009. "Growth in global materials use, GDP and population during the 20th century", *Ecological Economics*, doi:10.1016/j.ecolecon.2009.05.007.

While the economic crisis put an end to the gradual increase in global wood production and consumption in 2008, wood fuel production and consumption has not ceased to increase since 2000. This increase is probably due to the global economic growth, but also due to the introduction of renewable energy and climate change policies that are driving the demand for bioenergy.

In the **EU** over the past decreased, total wood removalsⁱⁱ (i.e. roundwood) have increased together with a slight increase in both total and primary forest area and increment. This would indicate that forests in the EU are managed sustainably. The gross value added of the forestry industry however seems to be still linked with wood removals. Between 1990 and 2000 the imports of roundwood to the EU doubled to satisfy demand. While domestic wood fuel production seemed to be stable between 1990 and 2000, since the turn of the millennium it has followed GDP. Renewable energy and climate change policies in the EU and Member States are believed to have driven the increase in wood fuel production in the EU.

ⁱⁱ Wood removals include wood that is harvested as well as felled by natural causes (e.g. wind storms) and removed from the forest. Wood fellings include wood removals, but also include wood that is felled and left in the forest.

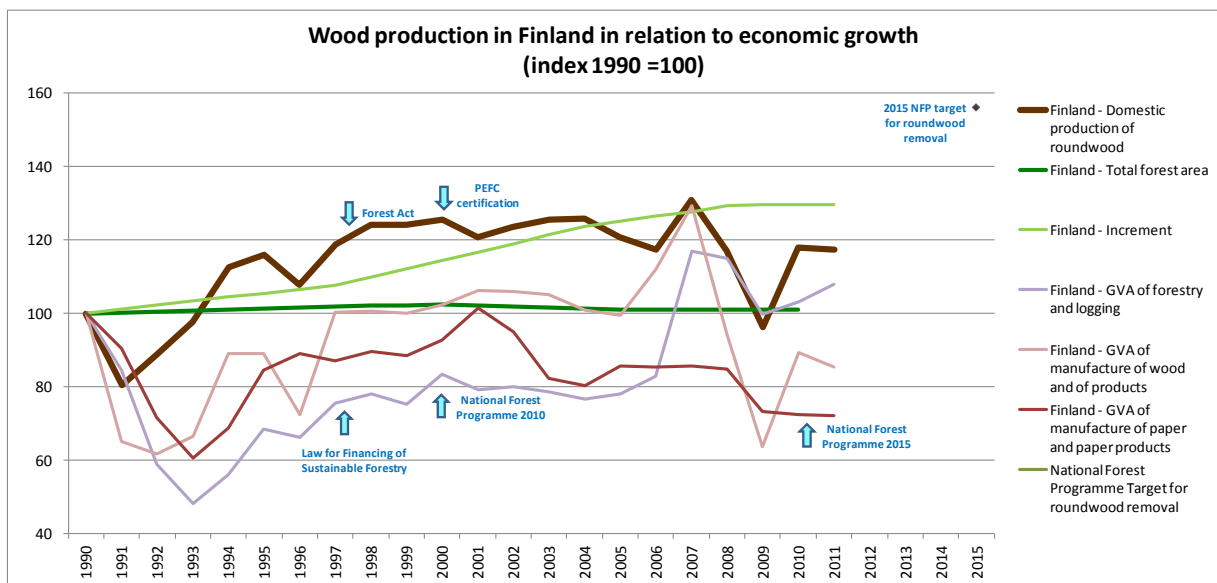
Figure 2: Forest and wood production trends in the EU, 1990-2011



Source: FAOSTAT. 2013. "ForesSTAT"; Eurostat. 2012. "Forestry statistics". Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Forestry_statistics.

In **Finland**, wood removals appear to be within sustainable resource limits. Even though domestic wood production has increased, it still remains well under the annual increment in growing stock and has not affected the total forest area in the period between 1990 and 2010. The economic performance of the industries that depend on wood seems to be coupled with wood removals. Despite different policies to increase the profitability and productivity of the forest and wood product industries, there has hardly been any economic growth.

Figure 3: Forest and wood production in the Finland, 1990-2011



Source: FAOSTAT. 2013. "ForesSTAT"; Eurostat. 2012. "Forestry statistics". Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Forestry_statistics

While forest area and wood production in Finland seems to be stable in the past two decades, until the economic crisis in 2008 domestic consumption of wood has increased – in particular wood fuel (FAOSTAT 2013).³² The additional consumption has come from a significant increase of imports (50 % increase from 1990 to 2007) and in particular imports of wood fuel (over 400 % increase from 1990 to 2007). EU targets and Finland's own policies on renewable energy is driving the increase in wood fuel.

The National Forest Programme 2015 has set ambitious targets for 2015 (Finnish Ministry of Agriculture and Forestry 2011):³³ domestic roundwood removal, and in particular the use of forest chips for bioenergy, is supposed to increase by 60 %; the net profit of private forestry should increase by over 100 % per hectare; and, the value of forest and wood products industry production in Finland should increase by 50 % (all compared to 2009). Although the removal of wood (including forest residues for forest chips) will increase it should remain under the sustainable limit.

However, overall decoupling of wood production from GDP was not achieved in Finland. Two factors explain this result: as referred to above, the forestry industry's economic output is still linked to wood removals, domestically and especially abroad due to the high volume of imports; moreover, domestic and international forest biodiversity continue to decline, further suggesting that no decoupling has occurred, due to further intensification of forestry practices (increase in overall wood production mostly through wood import production complying with lower environmental standards). Renewable energy targets and increased wood fuel production might be linked to this intensification.

4 Drivers affecting change: resource use/ environmental issues

What are the drivers affecting resource use (driving demand for the resource and leading to resource overuse) or other environmental impacts?

The main drivers affecting wood demand and the unsustainable management of forests differ according to the issue and geographical location (FAO 2010).³⁴ In general, the global demand for wood is driven by population growth and rising incomes (greater affluence). In the EU climate change and renewable energy policies have also been driving the global demand for wood fuel (Mantau et al. 2010).³⁵

Policy and market failures are the main drivers of tropical deforestation and degradation (FAO 2012).³⁶ In particular the growing global demand for food, feed and biofuels together with direct and indirect government subsidies and incentives for agriculture often make it more profitable to convert forest land to farming or grazing (UNEP 2009).³⁷ At the beginning of the 1980s, permanent agriculture and subsistence farming were by far the most common factors of tropical deforestation, while overexploitation for fuelwood and timber were only listed as a minor contributing factor (Lanly 2003).³⁸ The EU Renewable Energy Directive defines sustainable criteria that state that raw material for biofuel production cannot be taken from primary forest or other nature protection areas in order to not contribute to deforestation (F3 2013).³⁹

Another factor contributing to deforestation and degradation is that the costs are generally not borne by companies and individuals clearing the land for agriculture or logging and selling the timber, but by society, future generations and often the local rural communities that depend on the resources and ecosystem services of forests (TEEB 2010).⁴⁰ Higher costs of sustainable forest management and logging in the EU lead to a greater demand for imports instead of relying on domestic production (OECD 2009).⁴¹ With regards to illegal logging and land clearing, this is due to insufficient monitoring and enforcement (World Bank n.d.).⁴² The EU's FLEGT Action Plan including the EU Timber Regulation, and Voluntary Partnership Agreements (VPAs) attempt to address this.

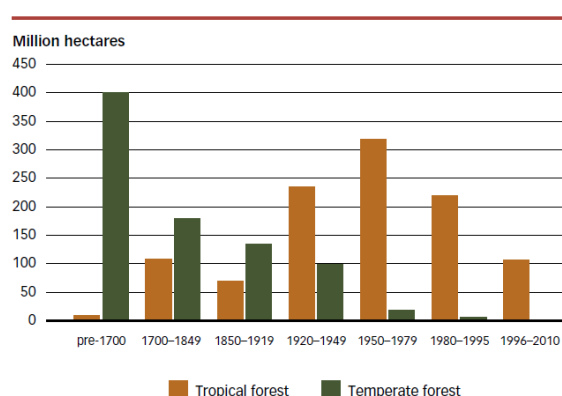
In the EU, forest degradation is caused by lack of capacity, knowledge and best practices for sustainable forest management including standards such as biomass harvesting guidelines (Evans et al. 2010).⁴³ The Finnish forest policies have demonstrated how these can be implemented.

5 Situation/trend prior to introduction of policy mix

Information on the baseline situation before the policy mix was introduced.

Global deforestation still occurs at an alarming rate, but 20 years ago deforestation has happening at an even faster rate (FAO 2012).⁴⁴ Figure 4 shows the rate of deforestation over different time periods. In the past 30 years it has mostly been tropical forests that have been lost, but before this temperate forests were also severely affected by deforestation.

Figure 4: Estimated deforestation, by type of forest and time period

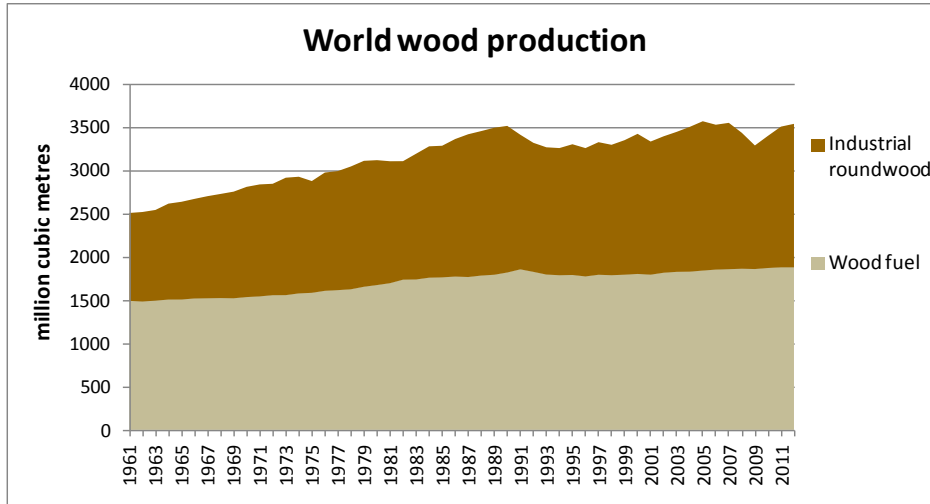


Source: Estimates based on Williams, 2002; FAO, 2010b.

Source: FAO. 2012. "State of the World's Forests 2012". Food and Agricultural Organization of the United Nations. Rome.

Over the past 50 years global wood production has increased until 1990 (Figure 5). Wood fuel represents over half of the total wood production. While industrial roundwood production seems to have stabilised, wood fuel continues to increase. Over the past 20 years the number of protected forest areas in all of the world's regions has increased (FAO 2010).⁴⁵

Figure 5: World roundwood production, 1961-2011

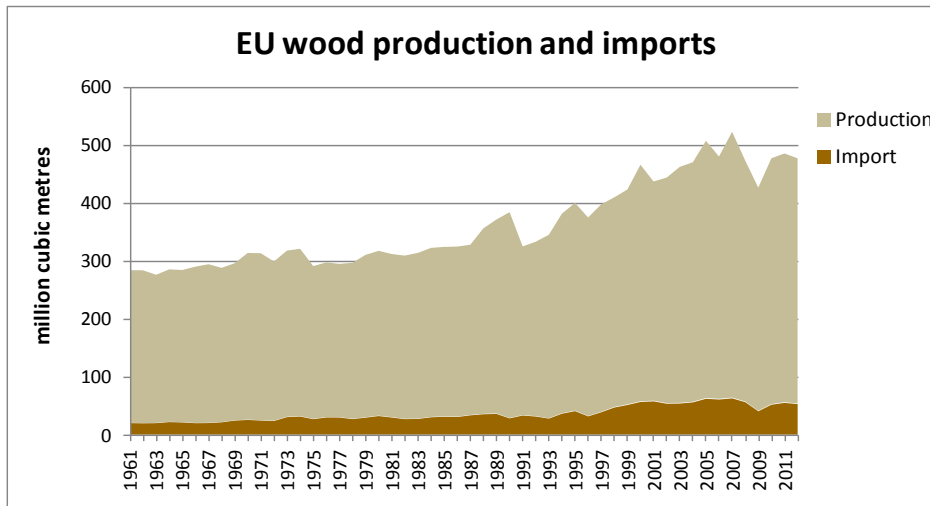


Source: FAOSTAT. 2013. "ForesSTAT"

The extent of illegal logging is not well known, but it is thought that illegal harvesting is quite significant in some countries, for example illegal logging represents 35 – 72 % of all logging in the Brazilian Amazon, 22 – 35 % in Cameroon, 59 – 65 % in Ghana, 40 – 61 % in Indonesia, and 14 – 25 % in Malaysia (Lawson and MacFaul 2010).⁴⁶

Domestic wood removal in the **EU** increased significantly in the 1990s (Figure 6). Wood imports have generally been increasing over the past 50 years.

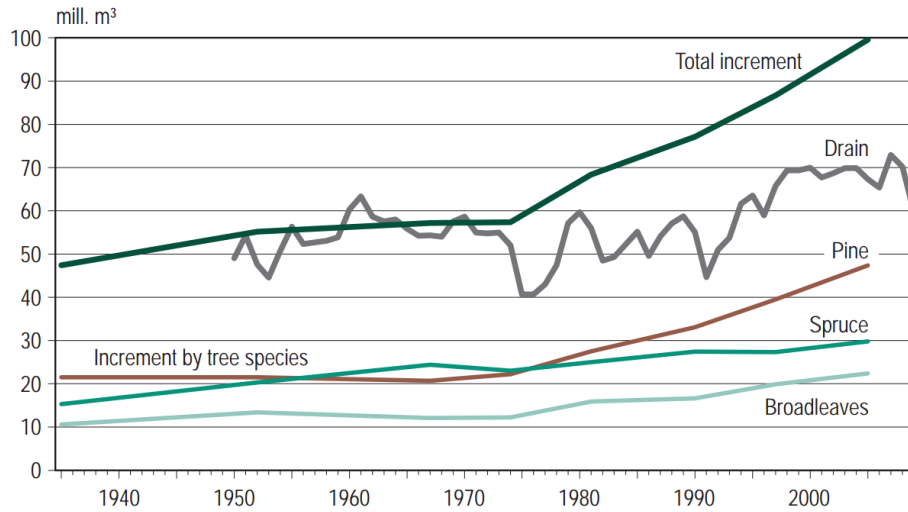
Figure 6: EU roundwood production and imports, 1961-2011



Source: FAOSTAT. 2013. "ForesSTAT"

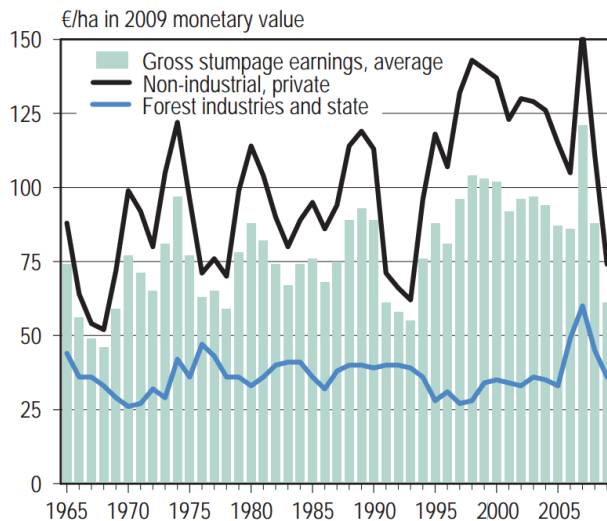
The total annual increment of growing stock already surpassed removals in **Finland** in 1975 (Figure 7), but the rate of decline of forest species was high (Metla 2011).⁴⁷ Earnings per hectare of forest land were generally lower before the 1990s compared to after (Figure 8).

Figure 7: Annual increment of growing stock in Finland in relation to removals



Source: Metla. 2011. "State of Finland's Forests 2011. Based on the Criteria and Indicators of Sustainable Forest Management". Compiled by the Finnish Forest Research Institute (Metla) for the Ministry of Agriculture and Forestry.

Figure 8: Gross stumpage earnings per hectare of forest land, 1965-2010



Source: Metla. 2011. "State of Finland's Forests 2011. Based on the Criteria and Indicators of Sustainable Forest Management". Compiled by the Finnish Forest Research Institute (Metla) for the Ministry of Agriculture and Forestry.

Since 1975 the annual increment of growing wood stock in Finland has greatly exceeded the total removals. Whilst the total economic value of the forestry industry has increased, the average earnings per hectare have remained fairly constant (Metla 2011).⁴⁸ In the past decade profits of forest industry companies have fallen drastically and only worsened with the economic crisis in 2008.

6 Description of policy mix(es)

This section presents the main policy mix that will be the focus of this ex-post assessment.

Lifecycle focus (point of application(s) of the policy mix): Forest management and forest product harvesting

Sector(s) covered: Forestry sector and timber industries

Scale of application of policy mix: National level

Implementing body: Several, depending on the policy

Objective of policy mix: To implement sustainable forestry management by reducing deforestation and forest degradation

The main policies that are the focus of this case study are listed in the following table. The objective of the case studies in DYNAMIX is to illustrate and investigate policy mixes that aim to achieve absolute decoupling. This particular case study examines the mix of policies with the aim of achieving sustainable forest management in Finland.

The demand for wood in the EU and in Finland is partly driven by recent climate change and renewable energy policies such as the Renewable Energy Directive and the National Renewable Energy Plans (ECN 2011).⁴⁹ As the objective of these policies is mitigation of climate change, they are not considered part of the policy mix, but rather a future challenge for sustainable forest management.

Besides the policies mentioned in Table 1, there are also a range of policies that aim to protect natural habitats (including forests) and biodiversity. Examples of these are the EU Habitats Directive and Natura 2000 and Finland's Nature Conservation Act (1997) and METSO Programme (the Forest Biodiversity Programme for Southern Finland 2008–2016). These policies support sustainable forest management, but as they do not address decoupling of wood production, they are not included in the policy mix of this case study.

A particular global policy initiative called Reducing Emissions from Deforestation and Forest Degradation (REDD+) offers financial incentives for developing countries to reduce carbon emissions from forests (Parker et al. 2009).⁵⁰ This is done by protecting forests and encouraging sustainable forest management. Although REDD+ also supports sustainable forest management, it is not the main objective as such and therefore is also not included in the policy mix of this case study.

Table 1: Overview of the Finnish forestry policies considered for the policy mix

Policy	Type of instrument	Life cycle focus	Sector covered	Scale of application	Implementing body	Objective	Entered into force
Forest Law Enforcement, Governance and Trade (FLEGT)	Voluntary agreement Control of trade through a licensing scheme for timber products exported to the EU	International trade	All timber and timber products	EU and countries that have entered into a Voluntary Partnership Agreement with the EU	EU and countries part of the bilateral Voluntary Partnership Agreement.	To address the growing problem of illegal logging and related trade To improve governance and capacity building in timber producing countries To regulate public procurement and private sector purchasing policies in timber consuming countries	FLEGT Regulation (2005)
EU Timber Regulation	Regulation Information requirements	Sale on the internal market	Timber and timber products, including logs, sawn wood, veneer sheets, manufactured items and pulp and paper	EU	Nominated competent authorities in EU Member States (e.g. relevant ministries and agencies)	To combat trade in illegally harvested timber	EU Timber Regulation (2010) will enter into force in 2013
Forest Stewardship Council (FSC) certification	Voluntary standards, certification and labelling	Forestry and purchasing	wood and paper products	Global	Forest Stewardship Council (FSC)	To promote environmentally appropriate, socially beneficial and economically viable management of the world's forests through certification and labelling	1993 Finland's FSC certification standards were approved in 2010
Programme for the	Voluntary certification and	Forestry	Forests (particularly small forest	Global	Programme for the Endorsement of Forest Certification	To promote sustainable forest management by encouraging independent third party forest	1999 (endorsed as

Policy	Type of instrument	Life cycle focus	Sector covered	Scale of application	Implementing body	Objective	Entered into force
Endorsement of Forest Certification (PEFC) schemes	labelling		owners)		schemes (PEFC)	certification	national standards in many countries around the world.) The Finnish Forest Certification System was accepted as part of PEFC in 2000
Finland's Forest Act	Regulation and guidelines for good forest management and silviculture	Forestry	Forestry (targets forest owners)	National (Finland)	State Forest Enterprise (Metsähallitus), the Forestry Centres and the Forest Management Associations	To promote economically, ecologically and socially sustainable management and utilisation of forests in order that the forests produce a good output in a sustainable way while their biological diversity is being maintained.	1997
Act for Financing of Sustainable Forestry	Subsidies for certain silvicultural procedures based on Forest Management Plans	Forestry	Forestry	National (Finland)	State Forest Enterprise (Metsähallitus), the Forestry Centres and the Forest Management Associations	To provide economic incentives for private owners that implement sustainable forest management practices	1997
National Forest Programme (NFP) 2010	Policy strategy and targets	Forestry	Forestry	National (Finland)	Ministry of Agriculture and Forestry , National Forest Council	To keep the forest industry in Finland viable and competitive To increase annual logging outturn, whilst ensuring high levels of environmental protection To achieve and maintain a favourable conservation status for	1999

Policy	Type of instrument	Life cycle focus	Sector covered	Scale of application	Implementing body	Objective	Entered into force
						species and habitats in forests To ensure sustainable forest management and improvement To promote and develop recreational use of forests and natural products To improve forest know-how by strengthening innovation To promote sustainable forestry internationally	
Strategic Programme for the Forest Sector (MSO 2009-2011)	Funding for innovation projects	Forestry	Forestry	National (Finland)	Ministry of Employment and the Economy	To launch and implement change processes promoting forest sector competitiveness and renewal To monitor and predict changes in the sector, while coordinating proactive measures to secure operations To coordinate measures extending across various administrative and other sectors	2009
National Forest Programme (NFP) 2015	Policy strategy and targets	Forestry	Forestry	National (Finland)	National Forest Council, National Forest Council Associations	To strengthen forest-based business and increase the value of production To improve the profitability of forestry To strengthen forest biodiversity, environmental benefits, and welfare implications To diversify and strengthen forest sector know-how To increase contribution to international and EU-level forest policy development.	2011 (initially adopted in 2008, but revised and adopted in December 2010)

6a. Supplementary context questions including elements pertinent to paradigm discussions

Timeline for the different phases of the policy cycle (i.e. rationale and objective-setting; appraisal; implementation and monitoring).

Description of the government in power during each of the three following policy phases: rationale and objective-setting; appraisal; and implementation and monitoring.

Does the mix contain policies that are unusual or not typical of the country/ies or regional/local administration that implemented it?

Names of resource efficiency concepts, terms, models, ranking/classification systems, accounting methods etc. used or relied upon in each of the three phases of the policy cycle: rationale and objective-setting; appraisal; and implementation and monitoring, and how they were used (e.g.: ‘waste hierarchy’ – used in objective-setting to link policy objectives to more desirable uses for waste).

The Finnish forest policies have been developed using a consensus-based approach, where forest owners and other key interest groups are involved in the process (Hirakuri 2003).⁵¹ Most of the forests in Finland are owned by private individuals or families – one in every eight Finn is a forest owner (Metla 2011).⁵² Furthermore access to and recreational use of forests is free for all in Finland. ‘Everyman’s Rights’ (rights of public access) guarantees everyone access to forests as long as they do not cause any disturbance or damage to the landowner. These characteristics of the Finnish forests contribute to general support for protecting forests and high compliance with policies.

6b. Instruments and orientation of policy mix

Instruments in the mix and whether one type of tool (i.e. regulatory, economic, information) is dominant.

For each instrument, what is its aim? What requirements does it place on relevant players (for example, phasing out a certain substance, meeting minimum recycling targets, etc.)? What reporting requirements exist?

The following provides a short description of each of the main instruments in the policy mix:

- **International trade regulations**

Two of the main EU policy instruments to prevent, detect and address the illegal harvesting of timber and associated trade are the FLEGT (Forest Law Enforcement, Governance and Trade) Voluntary Partnership Agreements (VPAs) and the EU Timber Regulation.

VPAs are trade agreements that timber exporting countries can voluntarily enter with the EU. The aim is to establish a licensing system that proves that the timber exported from an exporting country is legal. Currently six VPAs have been agreed, with Cameroon, Ghana, Central African Republic, Republic of Congo, Liberia and Indonesia, with agreements with four other countries under negotiation (Malaysia, Vietnam, Gabon and Democratic Republic of Congo) (Cooney et al 2012).⁵³

The EU Timber Regulation prohibits placing illegally harvested timber and products derived from such timber on the EU market. EU operators (those who place timber products on the

EU market for the first time) must exercise due diligence (a risk management exercise so as to minimise the risk of placing illegally harvested timber, or timber products containing illegally harvested timber, on the EU market). In addition, EU traders have an obligation to keep records of their suppliers and customers to facilitate traceability. Wood carrying a FLEGT licence, or a CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) permit, is considered to comply with the Regulation. Given that the EU Timber Regulation came into effect in March 2013, it was not further studied in this policy assessment.

- **Sustainable forest management certification schemes and labels**

Responding to growing concerns about forest degradation and loss, a number of environmental groups and other interested parties created in 1993 the Forest Stewardship Council (FSC), a private initiative designed to promote voluntary forest certification (UNEP, FAO and UNFF 2009).⁵⁴ Additional certification programmes followed including the Programme for the Endorsement of Forestry Certification (PEFC), the Canadian Standards Association, the Sustainable Forestry Initiative, Certifi-cacao Florestal in Brazil, the Malaysia Timber Certification Council, Lembaga Ekolabel Indonesia and the Chilean Forest Certification System. FSC and PEFC are the two major sustainable forestry certification programmes. PEFC caters more for small private, non-industrial forest owners and is set up as an endorsement process to assess independent national forestry management schemes against internationally recognised criteria for sustainable forest management. FSC sets global standards for sustainable forest management and then adjusts it to different national needs for sustainability (PEFC 2011).⁵⁵ Today, 95 % of Finland's forests are certified under the PEFC system (Metla 2011).⁵⁶

- **Regulation and guidelines for good forest management and silviculture**

The 1997 Finnish Forest Act aims to secure not only the long-term supply of wood, but also safeguarding the biological diversity in forests (Metla 2011).⁵⁷ The Forest Act sets requirements for felling, regeneration and conservation of certain habitats. It requires that certain parts of commercially used forests are left untouched or managed so that specific, biologically valuable habitats, such as surroundings of springs and certain types of habitats, maintain their characteristics. The Forest Act is complemented with guidelines for good forest management and silviculture, compiled and promoted by the Forest Centres and the Forest Management Associations.

- **Financial instruments**

The Finnish Act on the Financing of Sustainable Forestry was set up to provide compensation to forest owners when complying with sustainable forest management guidelines (Metla 2011).⁵⁸ Funding is provided based on Forest Management Plans and can be awarded for measures that ensure the sustainability of timber production; maintain the biological diversity of forests; and/or support forest ecosystem management. The financial support improves profitability of sustainable forest management and helps bring wood to the market from areas that would not otherwise be harvested.

- **Forest management plans**

Forest management plans is a report, based on on-site visits, on the forest resources of an individual holding and includes calculations for harvesting options and notes on forest management measures needed (Metla 2011).⁵⁹ They are necessary to get access to funding of sustainable management activities. Management plans for individual forest holdings are

mostly prepared by the Forestry Centres and the Forest Management Associations. Although voluntary, about 80 % of forest owners in Finland have a forest management plan (Hirakuri 2003).⁶⁰

- **Quantitative targets**

The Finnish National Forest Programmes (NFP) include a set of specific and ambitious targets covering a broad range of objectives such as forest management investment, securing employment and income based on forestry, assuring the diversity and health of forests and allowing the recreation and leisure particular to forests (Finnish Ministry of Agriculture and Forestry 2008, Finnish Ministry of Agriculture and Forestry 2011).^{61,62} The quantitative targets serve to guide and track the progress of policy initiatives.

Table 2: Targets set under the Finnish National Forest Programmes (NFP)

	Initial status in 1998	Status in 2009	NFP 2010 Target (set in 1999)	NFP 2015 Target (set in 2010)
Roundwood removals [million m³/yr]	58	42.0	63-68	65-70
Use of forest chips [million m³/yr]	0.8	6.1	5.0	8-12
Silvicultural investments [€ million/yr]	227		285	
Silvicultural investments (public subsidies)[€ million/yr]		79.5		85
Net result of private forestry [€ /ha/yr]	116	56.1	120	120
Forest sector exports [€ billion/yr]	12.8		14.9	
Wood products industry exports [€ billion/yr]	2.9		5.7	
Value of forest and wood products industry production [€ billion/yr]		15.0		22.5
Employed in forest sector [number of persons]	95000	70000	80000	73000

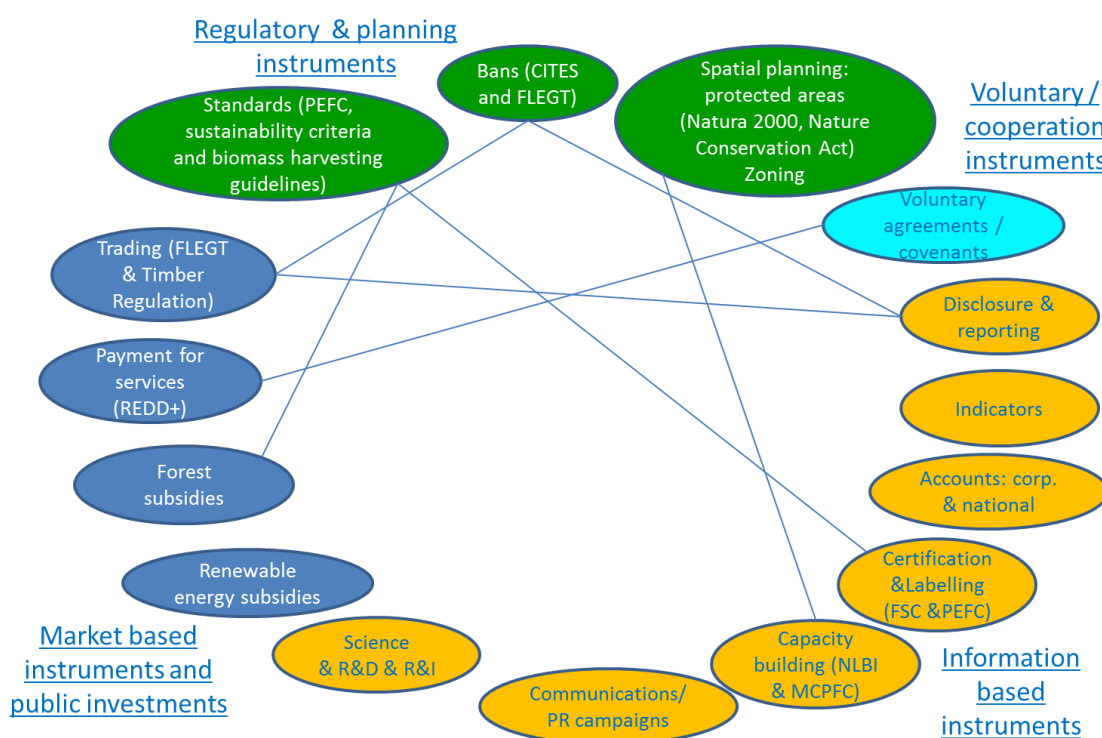
Source: Finnish Ministry of Agriculture and Forestry. 2008. "Finland's National Forest Programme 2015. More Welfare from Diverse Forests". Government Resolution; Finnish Ministry of Agriculture and Forestry. 2011. "Finland's National Forest Programme 2015. Turning the Finnish forest sector into a responsible pioneer in bioeconomy"

Figure 9 provides an overview of the instruments use in Finnish sustainable forest management policy. The instruments cover a broad range of different types of instruments, e.g. regulatory, economic, information based, etc. The 1997 Finnish Forest Act established mandatory requirements for sustainable forest management. Harvesting guidelines clearly define how sustainable harvesting should be performed. Sustainable forest management measures are supported by financial support with the Act on the Financing of Sustainable Forestry, but also through capacity building and publicly funded professional services offered by the Forest Centres and Forest Management Associations. Forest Management Plans at a local level are a key tool for forest owners to comply with the regulations, be eligible for

subsidies and to have a long-term view on the production and profitability. The Forest Inventories developed by the Finnish Forest Research Institute (Metla) provide a national view of forest resources and support the overall planning and setting of targets in the National Forest Programmes, e.g. the use of forest chips for bioenergy (which is also subsidised).

The voluntary certification and labelling schemes PEFC and FSC also provide guidelines for sustainable forest management. Their uptake is driven by the national certification system in Finland, but also through the uptake of green public procurement. PEFC and FSC currently do not comply with the EU Timber Regulation. FLEGT and CITES support the EU Timber Regulation to prevent illegal logging and trade, although there are some differences in requirements (Cooney et al. 2012).⁶³

Figure 9: Links between forest policies and instruments used in Finland and the EU



Source: Author's compilation

6c. Evolution of policy mix

Evolution of the policy mix throughout its existence –details of the introduction of the first policy tool(s), then all subsequent relevant tools, and related revisions/reforms (e.g. progressive increases in rates applied through economic tools, broader extension of regulation requirements, etc.).

The Forest Stewardship Council (FSC) was established in 1993 as the first international certification system to promote voluntary certification of sustainable forestry management (UNEP, FAO and UNFF 2009).⁶⁴ The Programme for the Endorsement of Forestry Certification (PEFC) followed in 1999. Both programmes have developed and spread across the world endorsing national schemes.

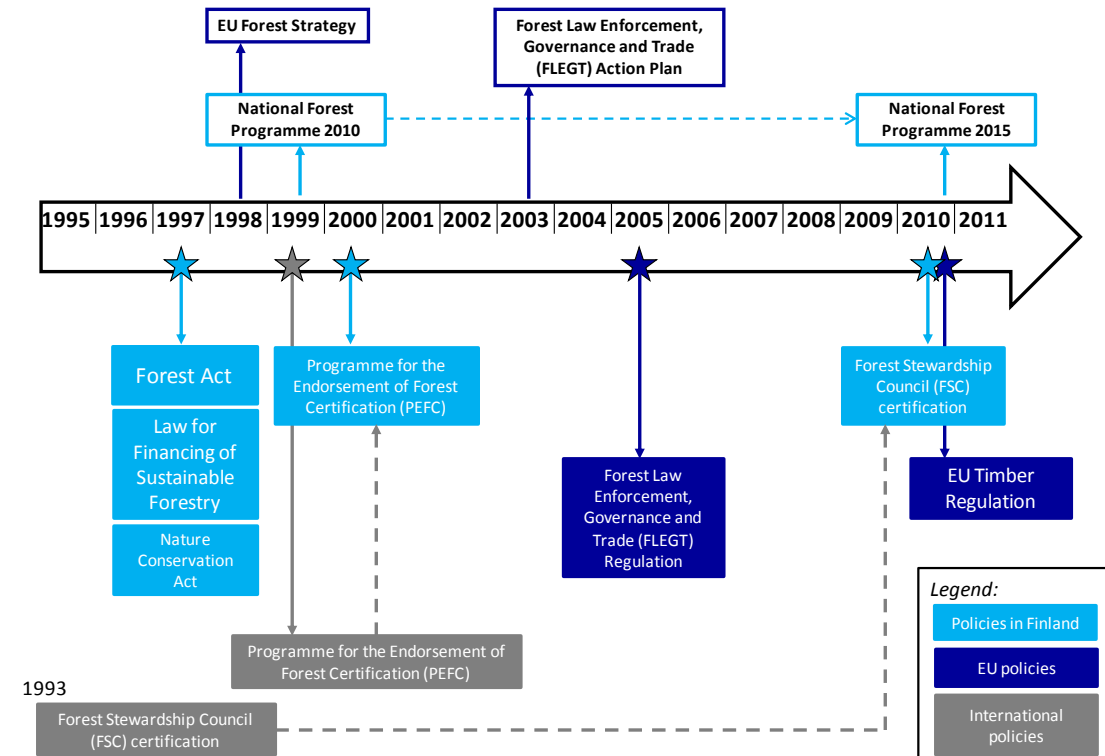
The EU Forestry Strategy was adopted in 1998 following the establishment of the Ministerial Conference on the Protection of Forests in Europe (MCPFE) in 1990 (IIASA 2009).⁶⁵ The FLEGT (Forest Law Enforcement, Governance and Trade) Action Plan, which specifically addressed illegal logging, was launched in 2003. The FLEGT Regulation and Timber Regulation followed in 2005 and 2010, respectively. Building upon the Forest Strategy, the EU Forest Action Plan was launched in 2005.

Finland's legal and regulatory framework for forestry has a long history with the first Forest Act passed in 1886. It has developed and been updated several times since then (Finnish Government 2012):⁶⁶ Forest Improvement Act in 1928; HKNL (Heikurainen-Kuusela-Nyyssonen-Linnamies) Forest Programme in 1961; this was followed by two Teho programmes (1962 and 1964), three Mera programmes (1964, 1966, 1969), the Forest 2000 Programme in 1985 and the New Environmental Programme for Forestry in Finland in 1994.

The latest main reform of Finnish forest policy occurred in the 1990s with the 1997 Forest Act, which was passed together with the Act for Financing of Sustainable Forestry and the Nature Conservation Act. The first National Forest Programme (NFP 2010) was approved in 1999. It built on the 1997 Forest Act and set out objectives to develop the Finnish forest sector economically, ecologically and socially as a whole (Finnish Ministry of Agriculture and Forestry 2007).⁶⁷ This was followed up by the current NFP 2015, which initially was approved by the Government in 2008, but due to changes in the forestry sector, this was revised and finally adopted in 2010. The NFP 2015 responded to 2008 economic crisis by promoting the development of new products and services in the sector (Finnish Ministry of Agriculture and Forestry 2011).⁶⁸ The NFP 2015 also emphasised the importance of how forests could contribute to climate mitigation through increased use of bioenergy and as a carbon sink (Finnish Ministry of Agriculture and Forestry 2008).⁶⁹

The Finnish Forest Certification System (FFCS) was designed in the 1990s for family forestry. The system was accepted as part of the PEFC in 2000. Finland's FSC certification standards were completed and approved by the international FSC in 2010.

Figure 10: Timeline for implementation of Finnish (and EU) forestry policies



Source: Author's compilation

7 Evaluation of policy mix: effectiveness (environmental sustainability)

Does/did the policy mix result in a positive environmental outcome?

Were its stated objective(s) met? Were the instruments used sufficient to meet the objectives?

Did other, unforeseen/unintended positive outcomes or impacts (environmental, social, economic) result? Did other such negative outcomes or impacts result?

Were these objectives set at a level to meet environmental needs (e.g. avoid crossing environmental thresholds/tipping points or achieve more sustainable levels of resource use/extraction (e.g. maximum sustainable yield (MSY) in fisheries)?

Which sectors/actors were identified as having key impacts/influences on the problem/issue? (e.g. specific industrial/ business sectors, consumers, economy as a whole?) Did any of the instruments specifically target these key sectors/actors? Was there significant take-up/implementation of (voluntary) instruments by these sectors?

Was the policy mix applied to a sector previously not targeted by policies on the issue under question, or in a new area/issue – thereby aiming to stimulate change?

What were the anticipated and actual outcomes, impacts and effects of the policy mix on the behaviour of sectors and actors targeted? (e.g. reductions in emissions from industry, increased recycling rates, increase/decrease in certain product purchases, etc.).

Relationships between the instruments, identifying positive/negative influences on the overall policy mix or on key instruments in the mix, as well as any positive or negative impacts from changes to the mix (introduction or termination of instrument(s), increase or decrease in tax/levy/charge, etc.). Level of 'connectivity' (strong, weak) between each instrument and the primary one(s).

Are there any indicators, monitoring systems, review processes or other monitoring mechanisms in place to track progress?

On a global scale, the total area of forests under sustainable management has increased tremendously (UNEP, FAO and UNFF 2009).⁷⁰ Since the establishment of the first international sustainable forest management certification scheme: the Forest Stewardship Council (FSC) in 1993, almost 400 million hectares of forests have been certified (includes FSC, PEFC and other similar schemes) (UNECE/FAO 2012).⁷¹ Although this only represents less than 10 % of all forests, it is significant progress for a voluntary instrument. Most of the certified areas are however in North America and Europe where deforestation is no longer a problem (FAO 2012).⁷² In the tropics and in developing countries, where deforestation still occurs, forest certification has not had as much uptake (less than 10 % of the total certified forest area in world). This is due to lack of awareness of certification programmes and a shortage of local technical capacity. Costs and the unsure financial return on investment are also seen as barriers to certification. The uptake of certified forest management schemes has been mainly driven by both public and private actors through consumer demand and green procurement criteria (e.g. EU Ecolabel, Nordic Swan), but also newer regulation such as the EU Timber Regulation (WWF 2012a).⁷³ In some cases certification schemes have been accused of contributing to increasing demand for virgin wood, instead of promoting the use of recycled wood or other alternative materials (UNEP, FAO and UNFF 2009).⁷⁴

The EU has only recently developed concrete policy instruments to directly address sustainable forestry management. The FLEGT and Timber Regulation contribute to preventing global deforestation and forest degradation through illegal logging and trade. It is too early to evaluate the effectiveness of these policies, but it would seem that EU's voluntary partnership agreements (VPAs) with producer countries have already had a significant positive impact on producer-country policies and regulations (Lawson and MacFaul 2010).⁷⁵ At present the VPAs need to be extended to more producer-countries and in particular to the countries that export most wood and wood products to the EUⁱⁱⁱ, if illegal logging and trade is to be stopped.

In the EU nature and biodiversity protection policies such as the Habitats Directive and Natura 2000 have been successful in both increasing the area of forests and improving the management of forests and their ecosystems. As sustainable forest management is a means in these policies and not their main focus, they were not considered part of the policy mix in this case study. Other EU policies that are not part of this case study, but have indirectly contributed to sustainable forest management such as the EU Ecolabel and Green Public Procurement (by increasing demand for FSC and PEFC certified products); and, the Waste

ⁱⁱⁱ None of the main exporting countries of illegal wood into the EU have VPAs at present

Framework Directive (by increasing the reuse and recycling of wood and paper and thereby reducing demand for virgin wood).

In Finland wood removals have been far below the annual growth since the mid-1970s (Metla 2011).⁷⁶ In terms of quantities, wood production was already within sustainable limits when the policy mix in this case study was introduced in the 1990s. However on other indicators of sustainability, particularly forest biodiversity, the policy mix has not achieved its objectives. The 2008 Red List of habitat types revealed that nearly half of Finnish forests (nearly 70 % of the types of forest habitats) were threatened, i.e. either vulnerable, endangered or critically endangered (OECD 2009).⁷⁷ This is thought to be due to the intensive forestry practices, which have resulted in an increase in the share of young and middle-aged forests with reduced ecological integrity and quality of habitats (e.g. related to the characteristics of living and dead trees). Forest policies have however had some effect as the rate of decline of certain forest species has slowed down in Finland, or in some cases even stopped since the 1990s (Metla 2011).⁷⁸ An evaluation of threatened species conducted in 2010 showed that the decline has slowed down or stopped for 81 forest species but continued for 108 species. Pilot projects under the METSO Forest Biodiversity Programme for Southern Finland showed that the most effective way to preserve biodiversity in privately owned forests is by getting forest owners to commit to conservation on a voluntary basis.

The contribution of Finnish forest to climate mitigation was emphasised in the National Forest Programme (NFP) 2015. Due to the increase in the growing stock the ability of Finland's forests to sequester carbon has almost doubled in less than two decades (Finnish Ministry of Agriculture and Forestry 2011).⁷⁹ The impact assessment performed for the NFP 2015 foresees that the carbon sink of Finnish forests will be reduced with the planned increase of wood removals, but this will grow again in 2020.

8 Evaluation of policy mix: efficiency (economic sustainability)

Is/was the policy mix considered cost-effective?

What has been the level of impact on resource use of the policy mix (the effect)?

What have been the costs of implementing the policy mix for target audience (e.g. business, households, etc.)?

What are the costs (financial, human) of implementing the policy mix for the implementing authority – i.e. the administrative/transaction costs?

Were sufficient resources made available to ensure an effective implementation of the policy-mix?

Was anything foreseen in the policy-mix to address competitiveness concerns (e.g. use of exemptions) or minimise transaction costs (e.g. thresholds below which monitoring wasn't required)?

Did the policy mix involve providing financial support (e.g. subsidies, low interest loans, tax breaks etc.) to key actors (e.g. sector, households, etc.)?

Did the measures generate revenues (e.g. in the case of taxes) and if so, was revenue recycled/re-injected into the economy, and to what levels and activities? Did revenue recycling have positive amplifying effects?

In synthesis - was the policy mix cost-effective?

What elements of the mix were (un)helpful in improving cost-effectiveness?

How was relative/absolute decoupling achieved?

Were resource limits or other thresholds taken into account and how were they addressed?

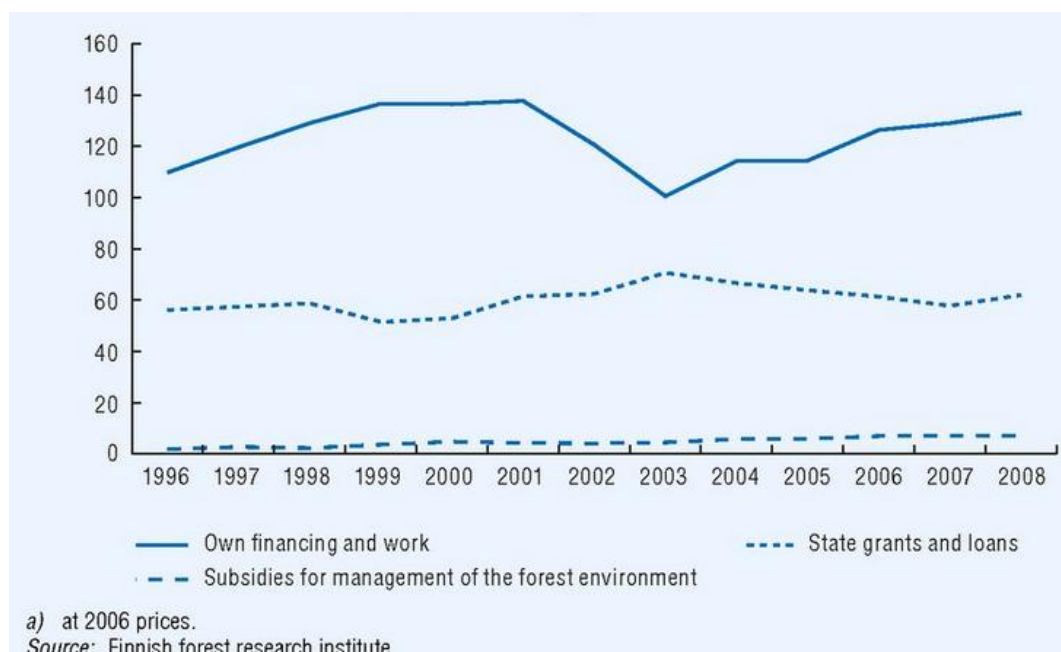
Sustainable forest management comes at a cost (UNEP, FAO and UNFF 2009).⁸⁰ Wood and wood products are traded internationally and additional measures to ensure the environmental sustainability of forests are not always profitable.

The direct costs of forest certification are estimated to be in the range of \$1.33 to \$22.93 per hectare (UNECE/FAO 2012).⁸¹ These estimates only address the direct costs of certification and audits. They do not include the operating costs for the certification schemes or the indirect costs associated with management changes and actions required to comply with the certification standard. Although forest certification can benefit from price premiums for wood in the range of 5 - 20 % (FSC 2011),⁸² most manufacturers say the price benefits are limited. Therefore forest certification schemes and sustainable forest management practices are often subsidised. Certification does however support landowners in better and more comprehensive planning guidance and provide them with a better bargaining position on the market.

In the impact assessment of implementing measures in the EU to prevent illegal logging and related trade (e.g. FLEGT Regulation and Timber Regulation), the costs of legality control was estimated to range between €0.22 – 0.34 / m³, which represents only a small additional cost as log prices range from €40 to – 100 / m³ (Indufor 2008).⁸³ For small companies (less than 10 people) the legality costs could however be as high as €2 / m³. The EU trade policies are thought to create a more level playing field for all countries exporting to the EU.

In Finland the 1997 Forest Act set requirements of safeguarding biological diversity in forests along with wood production. To provide an economic incentive to achieve the objectives in the Forest Act and the Nature Conservation Act, the Act for Financing of Sustainable Forestry provided a framework to subsidise sustainable forest management measures that would otherwise not be profitable.

Figure 11: State and forest-owner funding of investments in non-industrial private forestry, 1996-2008



Source: OECD. 2009. "OECD Environmental Performance Reviews: Finland 2009"

The total costs of forest improvement work in Finnish forests amounted to €289 million in 2010 (Finnish Government 2012).⁸⁴ The state subsidies to finance sustainable forest improvement measures in private forests amounted to €63 million. Self-financing and own labour input by private forest owners amounted to €144 million in 2010, which means that the subsidy contributed about 30 % of the total costs of forest improvement work in non-industrial private forests. On average, the state support to wood production on private holdings was €4.8 per hectare.

Subsidies are also provided for harvesting and chipping energy wood from non-industrial private forests. In 2010 the subsidies to these activities amounted to €18 million, resulting in about 2 million m³ of energy wood harvested.

The Finnish National Forest Programmes have aimed at reversing the trend of decreasing profits in the sector (OECD 2009).⁸⁵ As wood, energy, labour and other input costs have increased over the years, the Finnish forest industry has responded by cutting back capacity and importing raw wood. For example, in 2007 the price of Russian sawlogs was below the stumpage price of sawlogs procured in Finland (including the addition of Russians export duties of €10/m²). The economic crisis in 2008 weakened demand for forest products and led to a decrease in sawn wood prices and further decrease of profitability (Metla 2011).⁸⁶ Under 'normal' conditions in years until 2008, the Finnish policy mix resulted in harvesting increases (10-15 million m³ per year) leading to growth in terms of GDP, forest sector added value (€500-700 million / year), stumpage revenues (€400-500 million / year) and state taxes (€200 million / year) (Reunala 2009).⁸⁷ However, the economic crisis resulted in a decrease of 20 % and 1 - 1.5 % for the forest sector added value and GDP, respectively. This reveals the high sensitivity to global economic situation.

Table 3: Selected funding under the Finnish National Forest Programme 2015

Objective and funding	€ million in 2008	Estimated annual need in NFP 2015
Act on the Financing of Sustainable Forestry	57	70
Use of wood for energy	6.5	25
State aid for Forestry Centres	45	45
Funding for the Finnish Forest Research Institute (Metla)	43	41
Conservation of biodiversity	39	66
Business subsidies from the Ministry of Employment and the Economy	~100	
Research and corporate funding from National Technology Agency	47	
Forest sector education	110	110
Development cooperation funding from the Ministry for Foreign Affairs	16	22

Source: Finnish Ministry of Agriculture and Forestry. 2011. "Finland's National Forest Programme 2015. Turning the Finnish forest sector into a responsible pioneer in bioeconomy".

Although the NFP 2015 funds and encourages the development of new forest products and services, this is not expected to generate significant new revenue before 2020 (Finnish Ministry of Agriculture and Forestry 2011).⁸⁸

9 Evaluation of policy mix: welfare (social sustainability)

What social impacts have you found associated with the policy mix? E.g. jobs created, reduced health impacts, distributional impacts etc.

Were social aspects included in an ex-ante impact assessment of the policy mix if one was undertaken? What were these?

Has monitoring of social impacts been included in implementation, to identify actual effects compared to anticipated ones?

Was the policy mix designed to not be socially regressive? What measures were undertaken to ensure this?

Were equity concerns addressed and, in case of re-structuring of the economy/sector, measures in the area of reskilling of the workforce foreseen?

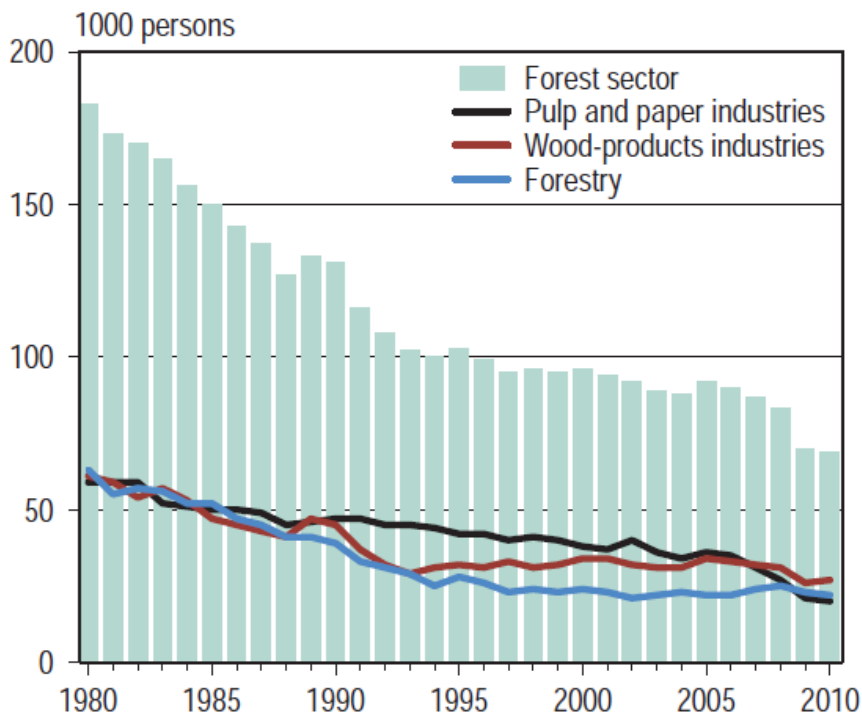
What other public acceptability elements were addressed or considered?

The main social impacts of sustainable forest management are the creation and maintenance of jobs and livelihoods, protection of indigenous forest people and improving the mental and physical welfare of the population through recreational use of forests (UNEP, FAO and UNFF

2009).⁸⁹ All the instruments in the policy mix are thought to contribute positively to all these social impacts, but it is difficult to say to what extent.

Mechanisation of harvesting and automation of the production processes of the forest industry as well as outsourcing is thought to have decreased the number of people employed in the forest sector considerably over the years (Metla 2011).⁹⁰ Even though the Finnish National Forest Programmes have tried to stop this trend, employment in the forest sector has gradually fallen over time. The global economic crisis caused a drastic drop in employment in the forest sector in Finland.

Figure 12: Employed persons in the forest sector, 1980–2010



Source: Metla. 2011. "State of Finland's Forests 2011. Based on the Criteria and Indicators of Sustainable Forest Management". Compiled by the Finnish Forest Research Institute (Metla) for the Ministry of Agriculture and Forestry

10 Overall assessment

What is your overall view on the success(es) or failure(s) of this policy mix?

How did the policy mix enable decoupling?

How could it have been improved to achieve its original objective(s) and to achieve absolute decoupling?

The objectives of the policies considered in this case study were to implement sustainable forestry management by reducing deforestation and forest degradation. While the policy mixes studied have improved the status of forests globally and locally, deforestation of

primary forests and severe degradation of forests and their ecosystem services do however continue, so the ultimate goal has not yet been achieved.

It is however remarkable that voluntary forest certification schemes have managed to cover almost 10 % of the world's forest areas in just 20 years. On a local level, FSC and PEFC aim at achieving absolute decoupling within resource limits through sustainable forest management. Although this comes at a cost, there are both short and long term economic and social benefits. In order for forest certification schemes to expand and work properly government institutions, monitoring and law enforcement must be strengthened particularly in developing countries (WWF 2012b, UNEP, FAO and UNFF 2009).^{91,92}

It is still too early to assess the impacts of the EU's Voluntary Partnership Agreements and the Timber Regulation, but the first indications show that these have significant positive impact on producer countries' policies and regulations to prevent illegal logging, deforestation and forest degradation (Lawson and MacFaul 2010).⁹³

The annual increment of growing stock (and also the net carbon sink) in Finnish forests has been greater than the removals for almost 40 years. Although this could have been seen as an example of absolute decoupling within resource limits, habitat degradation and in particular biodiversity loss still continues in Finland. Although there is discussion what the actual sustainable limits of wood production are in Finland (Eräjää 2012),⁹⁴ the National Forest Programmes assume that there is still significant potential to increase domestic production and in particular the harvesting of wood residues for use in bioenergy. Another aspect that questioned the absolute decoupling trends observed in the Finnish forest sector is that imports of wood have been growing in the years before the economic crisis. This is mainly due to the lower prices of wood in relation to costs of domestic production, but also the availability on the domestic market of certain timber grades (Finnish Ministry of Agriculture and Forestry 2007).⁹⁵ Much of the wood was imported from Russia, where it is suspected that a large share may have been illegally logged (WWF 2008).⁹⁶ Therefore, no decoupling was achieved in sustainable forest management for Finland.

In order to ensure that all wood used in Finland (domestic production and imported) is sourced sustainably and that a level playing field is created for companies, imported wood should live up to the same ecological requirements as domestic wood production. To achieve this, sustainable forest management certification of all imported wood and wood products would need to be mandatory. This would have global implications as wood and many wood products are traded as international commodities. If Finland and the rest of the EU impose specific environmental requirements on wood imports, this may result in a loss of competitiveness of wood product exports.

11 Relevance to the EU and transferability

Can the policy mix be applied at the EU level? Is it transferable to other Member States/countries?

What lessons are there that may be of general interest regarding policy mixes and what issues are there as regards transferability of the insights?

The Finnish forest policy mix provides a good example of how different policy instruments may support each other to achieve the objectives of sustainable wood production taking into account both environmental and social concerns. As forestry and wood production is mainly located in certain EU Member States, it might not be relevant to transfer the policy mix directly to EU level.

The lessons learnt from the development of Finnish forest policy are however useful for the EU and other policy areas. Some of the characteristics of these are high private ownership of natural resources, the use of a consensus-based approach, and emphasis on the recreational and cultural benefits of natural resources. These all contribute to general support for protecting natural resources and high compliance with policies.

Compensating landowners and wood producers for their efforts to support sustainable forest management measures that would otherwise not be profitably is a principle that already seems to be implemented in EU policy such as the Common Agricultural Policy. Forest management plans and professional support provided locally seem to be good policy instruments that could be transferred to other areas in the EU. Finally, clear standards and guidelines for sustainable wood removal and long term targets would also be of interest when developing policies to achieve decoupling.

More generally on the design of policy-mixes to achieve a sustainable management of renewable natural resources, given the EU operates in a globalised world, when introducing policies to achieve sustainable management of any specific renewable resources within its own borders, it should take steps to ensure that these sustainable yields are not achieved at the expense of the same renewable resource outside the EU, via the import of unsustainably harvested renewable resources from abroad. In other words, the global impact of its consumption should be addressed by the policy mix.

12 Stakeholder contribution

What insights did stakeholders provide?

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