



## Featured Topics

---

### The Potential for Exporting Finnish Wood Products to China

Raija-Riitta Enroth and Ritva Toivonen

Finding new markets is particularly important to Finland's mechanical forest industry because of the oversupply of sawnwood and wood-based panels in Europe. China's rapid economic growth and its huge population make it an attractive export destination. The Finnish Forest Research Institute and the Pellervo Economic Research Institute (PTT) have completed a joint study of the potential for exporting Finnish wood products to China. The study was based on statistics, published material and interviews with Finnish and Chinese experts.

China's GDP has been growing in recent years by an average of 7% p.a., and growth is expected to continue at a high level in the years to come. China's membership of the World Trade Organisation (WTO) in 2002 has accelerated foreign investment in the country, and China has already surpassed the United States as the biggest recipient of foreign investment. Its foreign trade is also growing strongly. For example, exports in the first half of 2004 were up by about 35%, and imports by about 43%, on the same period the previous year.

#### **China's Forest Resources Insufficient to Meet its Forest Industry Needs**

The forested areas of the People's Republic of China cover approximately 163 mill. ha, which is about the same as in the 25-member European Union. However,

China's population is approximately 1.28 billion, or about one fifth of the world's population (for comparison purposes, the total population of the EU is now almost 500 mill.). The majority of China's forests were converted to cultivation or pasture centuries ago, which, in turn, has led to erosion and desertification. The importance of forests in combating erosion has been acknowledged in recent years, and tree-planting projects are turning parts of China green again. However, with erosion protection being the main purpose of these afforestation projects, and with felling bans being imposed on certain areas of natural forest in the late 1990s, it is clear that China's forest resources are insufficient to meet the needs of its forest industry.

China is now the world's largest importer of tropical wood, and its roundwood imports from Russia have also increased greatly in recent years. China is also a net importer of almost all forest industry products, and about half of the value of these imports consists of pulp and paper products. In China's forest industry exports, the biggest items are furniture and joinery products. Demand for low-cost Chinese wood products has grown rapidly worldwide, and production is continuing to increase. The United States, for instance, has had to cut back its own furniture production because this has become unprofitable as a result of Chinese imports, and European producers have also lost markets. About half of all US furniture imports by value are from Asia, the majority being from China.

On the other hand, China is a clear net importer of sawnwood and wood-based panels, both needed as raw materials for its wood products industry. In 2002, China's sawnwood imports totalled 5.4 mill. m<sup>3</sup> and its sawnwood exports 0.4 mill. m<sup>3</sup>. Imports and exports of wood-based panels in the same year were 3.5 and 2.1 mill. m<sup>3</sup>, respectively.

In 2003, Finnish exports of forest industry products to China had a total value of only about EUR 127 mill. Most of these products were from the pulp and paper industry. Finnish exports of wood products to China have so far been very low: only 57 000 m<sup>3</sup> of sawnwood and 2000 m<sup>3</sup> of plywood were exported there in 2003. By comparison, Finnish sawnwood exports to Japan have more than doubled in the past ten years, with exports in 2003 being a little over 1 mill. m<sup>3</sup>.

### **Growing Construction Industry Demand in Cities**

About 60% of China's inhabitants still live in rural areas, but urbanisation is proceeding rapidly. Efforts are being made to reduce the enormous income disparities between different parts of the country, and especially between urban and rural areas, by, for example, relocating poor rural dwellers to the cities. It is estimated that the rationalisation process under way in agriculture and in enterprises throughout the country could release up to hundreds of millions of people, most of them wishing to live in towns and cities.

While previously the Chinese housing market was almost exclusively the domain of the state and work units (which had to provide homes for their employees), since 1990 employees have been allowed to buy homes offered by their employers at well below the market price. Added to this, the housing market was completely reformed in 1998: new job-related dwellings are no longer available; publicly owned housing has been privatised; property construction companies' access to the market is now easier; and the banks' housing loan system now allows housing loans to private households. China's housing market has been completely transformed. In Beijing, for example, about 80% of residential property sales consist of privately acquired homes. Owner occupation is spreading very rapidly in urban areas.

The available figures and assessments concerning the volume of housing production are to some extent conflicting. What is clear, however, is that there is substantial growth in housing production in China. Some US sources estimate that the number of new homes built in China in 2001–2005 will total 62.6 mill. Construction needs especially in towns and cities have grown and will continue to grow.

Demographic developments under way in China include a vigorous expansion of the middle class. The size of the Chinese middle class has roughly quadrupled in five years, which means many millions joining the ranks of the better-off every year. At the end of 2000, the middle class constituted an estimated 150 mill. people, or nearly as much as the entire population of Russia. Middle-class income levels in Asia are, however, considerably below those of Western countries, but the purchasing power of the population is growing nevertheless.

### **Many Obstacles to the Use of Wood in Construction**

Urbanisation means that apartment block construction will remain the most important form of residential construction in China. The authorities have favoured the use of materials other than wood in urban construction, mainly for fire safety reasons. Nearly every town and city in China has a very high population density, and fire is therefore a major threat. The need to build multi-storey apartment blocks because of the huge population has also increased the use of concrete and brick. Residential buildings in urban areas are generally at least six stories high.

Wood-based construction is nowadays also avoided because architects and developers know little about it, residents are unfamiliar with it, its durability and safety compared with concrete are questioned, and pest damage is a danger in southern parts of the country. Moreover, the existing building regulations contain no guidelines on wood-based construction.

In autumn 2004, a group of producer countries (Finland, Sweden, Norway, Austria, Germany and France) embarked on a collaborative effort to increase the use of wood in construction, aimed at actively promoting the use of wood in China and Japan. Spe-

cific projects in China include promotion of wall and ceiling systems and the publication of a handbook on wood-based construction. Efforts are also being made to gain approval for the use of European stress graded wood in construction.

Although the majority of residential buildings are apartment blocks, an increasing number of detached houses and other low-rise buildings have also been constructed in urban areas. Such buildings were already making an appearance in the 1980s in Shanghai, Beijing and other major cities, but the numbers were very few. The real 'low-rise boom' began in the late 1990s, when detached and other low-rise housing was seen as a visible sign of personal success.

### **Spending on Home Decoration and Furnishing**

Most new homes sold in China are devoid of any interior fittings or fixtures, which leaves the new owners to buy everything themselves, beginning with floor, wall and ceiling materials. It is believed that this practice will continue in the future, too, as it allows buyers to fit out their new homes according to their own taste, timetable and budget.

The practice has also led to a sharp increase in the number of companies selling interior decorating and furnishing supplies. Ikea, based in Beijing, is a good example of this, but Germany's OBI and the UK's B&Q have also arrived on the Chinese market.

Dark hardwoods have traditionally been favoured in Chinese interiors. However, light-coloured wood has begun to gain a foothold. According to one of the country's biggest developers, China's middle class perceive the interior styles and products of Ikea to be both fashionable and of top quality. Some indications do indeed suggest that trends in consumer tastes are turning in a direction favourable for the Nordic wood products industry. If Ikea-type products, and Western styles in general, are to be adopted as quality criteria in homes, this will focus considerable attention on the type of products and production that are suited to Nordic wood raw materials and expertise.

### **Chinese Market of Interest to Finland's Competitors Too**

In the interviews with experts it was clear that the Chinese market is a promising potential export destination for the Finnish wood products industry. However, the prevalence of apartment blocks and the lack of familiarity with wood will not make it easy to achieve a significant increase in the use of wood as a building frame material. It may therefore be easier to find markets for wood products in interior fittings and other processed products than in bulk construction products. Any increase in the first of these will be more reliant on consumer opinion than in Europe, because in China it is the consumer and not the developer or designer (as in Finland, for example) who chooses the interior surface materials and fixtures in a new home.

Finland's competitors are, naturally, also interested in the Chinese market. The United States, for example, has long been an active investor in China's wood products market, and Russia has been supplying not only roundwood but also a growing volume of sawnwood. The competition will therefore be tough. In addition, there are other problems and risks in the Chinese market, such as the danger of illegal product copying, the bureaucratic processes involved and an unfamiliar business culture. Moreover, despite the strong growth trend, even China's GDP growth will probably experience occasional setbacks. A marked downswing could, for instance, reduce the amount of construction considerably and may even provoke social unrest. Companies striving to enter the Chinese market would do well to ensure that they have a sufficient buffer to withstand such eventualities.

### **Sources**

FAOSTAT. <http://www.fao.org/forestry/>

Mäki, P., Toivonen, R. & Enroth, R-R. 2003. The potential for exporting Finnish wood products to China. Pellervo Economic Research Institute (PTT) reports no. 187. 59 p. (In Finnish)

Trade in secondary-processed wood products slowed: Value-added wood products markets, 2001–2003. In: Forest Products Annual Market Analysis 2002–2004. Timber Bulletin – Volume LVI (2003), No.3. UNECE, FAO. Geneva.

# Greenhouse Gas Emissions Trading and the Finnish Forest Industry

Maarit Kallio and Johanna Pohjola

The Kyoto Protocol to the United Nations Framework Convention on Climate Change is due to enter into force in February 2005 now that it has been ratified by Russia, as this brings the number of ratifying countries to the required minimum of 55 and ensures that the required minimum of 55% of the 1990 greenhouse gas emissions of the industrialised countries is covered by the Protocol. The aim is to reduce the greenhouse gas emissions of industrialised countries. The European Union has already embarked on action to meet the obligations under the Protocol and has enacted the Emissions Trading Directive, which applies to the entire Union. From 2005 onwards, all industrial installations covered by the terms of the Directive must have a greenhouse gas emissions permit for fossil-fuel carbon dioxide emissions.

Finland's pulp and paper industry production installations fall within the sphere of the Emissions Trading Directive. However, the mechanical forest industry (sawnwood and other wood products) will not be affected directly by the emissions trading regulations, because its CO<sub>2</sub> emissions are quite low. In emissions trading, industrial installations will each be granted a certain amount of annual emission allowances for producing CO<sub>2</sub>. The first round of allowances will be for the trial period 2005–2007. These will be issued free of charge and will be determined on the basis of 1998–2002 emissions. Some will be reserved for new production units entering service during the trial period. After this phase, the first Commitment Period under the Kyoto Protocol will begin, which will be 2008–2012. This will then be followed by five-year Commitment Periods, each requiring the renewal of greenhouse gas emissions permits.

The idea of the EU's emissions trading scheme

is to allow emissions to be reduced where this can be done at lowest cost. The greater the cost that an emissions producer would have to incur to reduce his emissions, the higher the price he will be willing to pay for purchasing emission allowances in emissions trading. The inclusion of the new EU member states will probably reduce the price of emission allowances, which will benefit Finland, too, because the costs of reducing emissions in Finland are high in many sectors. The so-called Linking Directive will also reduce the price of emission allowances by enabling credits earned by the developing and transition economies in emissions reduction projects to be linked in with the EU's emissions trading scheme.

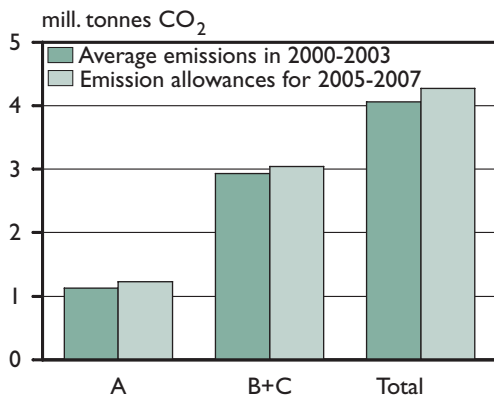
## How Will Emissions Restrictions Affect the Finnish Forest Industry?

Carbon dioxide emissions originate mainly from energy production that uses fossil fuels (oil, natural gas, coal), peat or emission-neutral biofuels (e.g. wood). The energy-intensive paper industry is Finland's biggest electricity consumer and accounts for about 12% of the country's fossil-fuel CO<sub>2</sub> emissions. The pulp and paper industry's CO<sub>2</sub> emissions from the use of fossil fuels and peat amounted to approximately 5.3 mill. tonnes in 2003. This figure does not include emissions from purchased electricity, which the Finnish Forest Industries Federation estimates to be about 2.6 mill. tonnes.

Action to restrict CO<sub>2</sub> emissions will have both direct and indirect effects on the paper industry. In all, the indirect effects could be greater than the direct effects.

The direct cost to a company of reducing its

emissions is the investment needed to achieve this reduction, or, alternatively, the cost of purchasing the necessary emission allowances if the company were to exceed its own emissions quota. There is considerable uncertainty over the likely price of emission allowances, as this will depend on various demand and supply factors which are difficult to forecast: the initial allocation of emission allowances chosen by the countries participating in the emissions trading scheme; the need to restrict emissions and the costs of doing so; and future trends in energy needs and in the industrial sectors covered by the emissions trading scheme. So far, trading in emission allowances for the 2005–2007 trial period has been at less than EUR 9 per tonne of CO<sub>2</sub>, but the absence of an active market at this early stage means that this is not a reliable indicator of the eventual price level. Estimates of the price of emission allowances for the trial period 2005–2007 are in the range EUR 7–15, and for the period 2008–2012, EUR 10–20. Honkatukia et al. estimate that if the market price of emission allowances remains below EUR 22 per tonne of CO<sub>2</sub>, the pulp and paper industry would benefit from purchasing emission allowances instead of taking action to reduce its own emissions.



Source: Ministry of Trade and Industry

*Pulp and paper industry average CO<sub>2</sub> emissions in 2000–2003 and annual emission allowances for the trial period 2005–2007, groups A, B and C. Excludes energy production emissions by pulp and paper mill plants set up as separate energy production companies.*

Implementing emissions restrictions will also require active monitoring, reporting and planning of emissions, which will generate administrative costs. There will also be transaction costs in emissions trading.

The indirect effects will include a rise in the price of production inputs. In particular, the costs of electricity generation, and therefore electricity prices, will increase in the EU countries; as the biggest emissions producer, the energy sector will naturally be affected by the emissions restrictions. According to a study by the Technical Research Centre of Finland (VTT), an emission allowance price of EUR 10 per tonne of CO<sub>2</sub> would mean an increase of EUR 7.5/MWh in the price of market electricity on the Nordic electricity market. In the trial period, however, the rise in electricity prices is likely to be less than this, due to the free initial distribution of emission allowances and the fairly generous quotas. If the value of emission allowances for the electricity purchased externally by the forest industry were to be later transferred in full to the price of the purchased electricity, this would mean an increase of approximately EUR 26 mill. in the Finnish forest industry’s energy costs, calculated at an emission allowance price of EUR 10.

Higher energy prices and the costs of reducing emissions will also be reflected in the prices of energy-intensive production inputs, such as chemicals, fillers and coating materials. With the position of emission-neutral wood improving against other fuels, the forest industry could, in the longer run, find itself in competition with the energy sector for wood chips, which could lead to an increase in roundwood prices.

### Trial Period Emissions Quotas Higher Than Earlier Emissions

For the Finnish paper industry, the emissions quotas presented for the trial period 2005–2007 are not very stringent. The diagram illustrates that the annual emission allowances for the pulp and paper sector exceed the sector’s average emissions for 2002–2003 both in terms of emissions inextricably bound up in the production process (group A) and emissions from the sector’s own energy production (groups B and C). In total, the emission allowances exceed the average emissions

of recent years by about 5%. These allowance figures, which are based on calculations by the Ministry of Trade and Industry, cover almost 80% of the pulp and paper sector's total CO<sub>2</sub> emissions (in 2003, these amounted to 4.1 mill. tonnes, according to the Ministry; the Finnish Forest Industries Federation puts the figure at 5.3 mill. tonnes). The other 20% is from the energy production by pulp and paper mill power plants set up as separate energy production companies; the emission allowances for these companies are included instead in the industrial energy production sector. In this sector, too, the emission allowances exceed the average emissions of recent years.

Even if the paper industry were to operate at full capacity in the trial period, the costs of purchasing the necessary emission allowances for this would not be very significant for the sector as a whole. However, these costs would not be evenly distributed, as some installations would have to purchase a considerable amount of emission allowances on the open market, while others would have allowances to sell.

### **Emissions Restrictions Will Have Only a Minor Impact on Forest Industry Profitability**

Emissions restriction obligations are not likely to have a major impact on forest industry production during the emissions trading trial period. Even at their highest, the sum of the costs examined above will be clearly less than 1% of the value of Finnish pulp and paper industry exports, which totalled approximately EUR 9 billion in 2003. Compared with the effects of other

factors such as exchange-rate fluctuations or the fluctuations typical in pulp and paper prices, the impact of emissions reduction on forest industry profitability will not be significant in the next few years. Finland's obligation to reduce its emissions to the 1990 level will, however, create pressures to reduce emissions quotas after the trial period. The costs of reducing emissions are therefore likely to rise after the trial period, unless new mechanisms are added to the system to reduce emission allowance prices or emission restriction costs.

### **Sources**

- Finnish Forest Industries Federation. 2004. Environmental Report, Statistics for 2003. 21 p.
- Honkatukia, J., Joutsenvirta, E., Kemppi, H. & Perrels, A. 2002. Implementation options for EU-wide emissions trading, and the effects from Finland's perspective. Government Institute for Economic Research (VATT) discussion papers 282. Government Institute for Economic Research. Helsinki. 85 p. (In Finnish)
- Ministry of Trade and Industry. 2004. Government decision on the proposed National Allocation Plan. 19.8.2004. 34 p. + appendices. (In Finnish)
- Ministry of Trade and Industry. 2004. Emissions trading impact on the Nordic electricity market – Proposed strategy for Finland. Final report to the Ministry of Trade and Industry. Mikko Kara, VTT Processes. 4.10.2004. 108 p. + appendices. (In Finnish)

## Border Inspection of Roundwood Imports: Pathogens and Pests

Jarkko Hantula and Pekka Niemelä

The volume of roundwood imported to Finland has roughly tripled since the start of the 1990s, reaching over 16 mill. m<sup>3</sup> in 2003, and there is every likelihood that this growth will continue in the years to come. Far and away the most important source of Finnish imports is Russia: over 80% of all Finland's imported roundwood comes from Russia. In 2003, softwood accounted for about 7 mill. m<sup>3</sup> of roundwood imports, and almost 90% of this was from Russia.

Besides roundwood, Finland also imports sawnwood, other wood products, wooden packaging materials, and seedlings and other supplies for artificial regeneration. From the plant protection viewpoint, seedlings are the most important of these imports. Imports of seedlings from low-cost EU member states, including the Baltic countries and Poland, are expected to increase considerably in the future.

### New Border Controls

The European Commission's Standing Committee on Plant Health has decided that, as from 1 March 2005, softwood roundwood imported from any third country must be supplied with a phytosanitary certificate and must be inspected. Finland considered these directive amendments to be unnecessarily stringent for imports of roundwood from Russia's European regions, because the risk to plant health is assessed to be minimal and the required inspection of about 150 000 import consignments a year would slow down roundwood imports unreasonably. The Committee also approved a regulation by which member states can request a lower level of plant health inspection for certain imports. Finland did not approve this proposal either, as it stood. Instead, it requested – jointly with

Sweden – a reduced rate of inspection for softwood imported from Russia's European regions: instead of the 100% inspection of pine and spruce consignments, there would be a 1% or 5% inspection, depending on which particular part of Russia's European regions the consignment originates from. The Commission's experts have stated that a 1% inspection sample will be sufficient. The final decision will be taken by the Commission after it has heard the views of the Standing Committee on Plant Health.

### Roundwood Origin Affects Forest Pest Risk

Plant inspection is designed to look for dangerous forest pathogens and pests that are on the quarantine organism list. In the case of forest trees, the main listed organisms are insects and fungi. Among the insects are the Siberian moth (*Dendrolimus sibiricus*) and certain bark beetle species (*Ips hauseri*, *I. subelongatus*, *Scolytus morawitsi*). Of particular significance is also the pine wood nematode (*Bursaphelenchus xylophilus*), which burrows into trees with the aid of sawyer beetles (*Monochamus* sp.); once inside, it multiplies and eventually kills the tree. The pine wood nematode was found in 1999 in Portugal, having probably come from the United States. Efforts have been made to isolate the infected area in Portugal, but the nematode has not been successfully eliminated.

In any assessment of the need for border inspection of imported roundwood, the decisive factor is the origin of the wood. Roundwood imported from the boreal forest zone in Russia's European regions should not present a major risk, because the insect and fungi species there are the same as in Finland. In addition, the species in Russia's European regions spread into

Europe long ago, with the building of the railways. By contrast, more distant imports of roundwood from Asia could present considerable risks. This is because of the known presence there of pathogens and pests that are dangerous to softwood. These include the pine wood nematode, several beetle species classified as serious potential pests (e.g. *Aelosthes sarta*, *Tetrobium gracilicorne* and *Xylotrechus altaicus*), bark beetle species (e.g. several *Ips* species) and species of blue stain fungi associated with them. It is also well known that East Asia has been the evolutionary centre of many forest pathogen fungal families. This is where both Dutch elm disease (*Ophiostoma novo-ulmi*) and chestnut blight (*Cryphonectria parasitica*) originated, which have destroyed trees all over the world.

East Asia also has many forest pathogens and pests that are unknown in Finland (and some even unknown to science), such as Armillaria root rot species (*Armillaria* sp.), *Inonotus* species, *Phellinus* species and endemic buttrot species (*Heterobasidion* sp.). The danger of these forest pathogens and pests to Finnish commercial forests cannot be evaluated because their behaviour in such an environment has not been studied. Consequently, these species are not given special attention in border inspections, which means that roundwood sales could result in such species being conveyed into Finland more easily than the actual quarantine species. If this were to happen, it can only be hoped that they would not cause significant destruction to Finnish tree species.

Seedling sales within Europe also present possible risks. An example of such is the recent discovery in Finland of the causative agent of Sudden Oak Death (*Phytophthora ramorum*). This disease was found in seedling consignments and has not spread to Finland's natural environment, but its appearance nevertheless demonstrates the need for constant vigilance. In the last ten years, Sudden Oak Death has spread in two different forms, one causing extensive destruction of oak woodlands in the United States and the other a less destructive form found in Europe. The situation is problematic in that, despite all efforts, the spread of the disease has not been contained, and new cases are constantly being found. For example, it has already

spread to the United States on at least two separate occasions.

### **Risk Assessment is Difficult**

If unknown pathogens or pests spread to Finland, they could cause destruction in several ways. The most common risk is that a pathogen or insect that causes destruction elsewhere will also cause destruction in Finnish tree species. Hence we are aware of the dangers of, for instance, pine wood nematode and Dutch elm disease.

A lesser known risk is that a pathogen which is harmless or causes little damage elsewhere will cause considerable destruction to natural species in its new habitat (which are often related to a host plant growing in the country of origin of the pathogen or pest). A prime example of this is chestnut blight, which is practically harmless in East Asian chestnut species but has almost completely destroyed the American chestnut.

Yet more unpredictable is the risk presented by microscopic fungi and insects that cross with an existing species in their new habitat to form a hybrid species. Such a case is the hybrid *Phytophthora* found in Central Europe, which, although neither of its parent species appears in alder, has destroyed riverside alders at an accelerating rate in the past twenty years, adding to erosion problems too.

A fourth factor concerning plant pathogens and pests is the introduction of new plant species. If, for instance, plant species not endemic to Finland but found elsewhere in Eurasia were to be grown as decorative plants, pathogens could be transferred over large distances. This is what happened in the early twentieth century, when white pine blister rust (*Cronartium ribicola*) was transferred from Asia to Europe via the cembra pine plantings at Siberian railway stations. A similar explanation may also lie behind the arrival in Finland of a new alder rust (*Melampsorium hiratsukanum*) that uses larch as an intermediate host. The introduction of new plant species can also fail because of a forest pathogen or pest that accompanies it, such as the case in Iceland, where flea beetles that arrived

with seedling consignments destroyed the pine and sitka spruce plantings.

### **Border Control Efforts Should be Directed to Where the Risk is Greatest**

To conclude, border control of roundwood imports must pay particular attention to consignments whose risk is known to be high or is unknown. Close attention to point-of-origin information is therefore essential. The situation would be untenable if, for instance, roundwood from Russia's European regions were also to include roundwood from further east. Roundwood importers thus have a key role to play in ensuring the accuracy of the point-of-origin information for roundwood consignments.

### **Sources**

Ministry of Agriculture and Forestry. 2002. Preparations for more effective measures to combat the pine wood nematode (*Bursaphelenchus xylophilus*): a crisis contingency plan. Helsinki. 27 p. [http://www.mmm.fi/el/julk/pdf/valm\\_manank.pdf](http://www.mmm.fi/el/julk/pdf/valm_manank.pdf) (In Finnish)

Ministry of Agriculture and Forestry. 2003. National Plant Protection Strategy 2004–2013. Working group memorandum MMM 2003: 25. Helsinki. 136 p. [http://www.mmm.fi/julkaisut/tyoryhmuuistiot/2003/tr2003\\_25.pdf](http://www.mmm.fi/julkaisut/tyoryhmuuistiot/2003/tr2003_25.pdf) (In Finnish)