

The Impact of Nordic Cluster on the Development of Wood and Forest Industries in Estonia: Regional vs. Domestic Cluster¹

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Abstract

The well-developed regional economic clusters have an important position in modern world. Intra-cluster cooperation helps companies to benefit from integrated value creation that provides several synergetic opportunities. One of the most prominent clusters in Nordic area has formed in wood and forest industries. The economic activities in this field extend from roundwood trade and forest replantation to the production of finest paper and furniture. Although, initially based on high level of forestation in Scandinavia, ecologic as well as economic considerations have facilitated the expansion of the cluster to nearby areas, like Baltic region and Russia. Nordic forestry MNC-s have acquired there roundwood procurement companies as well as sawmills. Much less effort has been made in establishing high-end production processes, like pulp and paper production in this area.

The aim of this study is to investigate the dual impact of regional clusters on the development local clustering and networking ties. In this respect the positive impact in terms of technology transfers, financial support, and market access are analyzed alongside with potentially more detrimental aspects, like replacing local value-adding processes with roundwood and paperwood exports and limiting the international marketing options of acquired producers. In short, the study should point how the emergence of international network ties impacts the development of local clusters and integrated value chain.

The results indicate that regional clustering has several positive influences on development of local/domestic clusters in terms of technology transfer and foreign market access, but dominant intra-corporate networks can also lead to centralised operation that set lower value to local supply chain relationships. However, additional survey evidence shows that among smaller companies local and foreign relational networks within the cluster are more important than intra-corporate ties with parent company and its other units. Thus, possible negative impact is for them more indirect than for larger domestic producers acquired by MNC or regional corporations.

Keywords: networking, economic clusters, wood and forest industry, Nordic region

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Introduction

Production companies' intension is to profit from providing added value to consumers. Large increases in efficiency of value-adding transformation process become visible via innovations and continuous improvements. However, in an era of integrated business processes, company is often embedded within much broader value-chain, consisting from several companies. These regional clusters of related companies provide cluster members for example with knowledge, technology and support for complementary development. However, so called 'flagship' companies, which are relatively independent in their choices and form a cluster core, can also limit the development possibilities of other companies in the cluster, which have to adapt to a strict role distribution enforced by cluster core. These possibly adverse influences of clustering and networking deserve further investigation. Although networks and clusters have several similarities depending on the definitions applied, current study will differentiate between them using concept of Maskell and Lorenzen (2004), where networks refer to institutional arrangement (strong ties) and clusters to institutional environment (location and contextual ties). Thus, in this case, networks represent stricter more organised forms of cooperation and clusters more location-bound loose partnerships. This approach is applied in order investigate how these different types of relationships interact. In addition to that, multinational, regional and local/domestic levels of industrial cooperation within networks and clusters are investigated in order to see if there exist signs of hierarchical subordination between these levels of cooperation. Clusters are usually more clearly related with the concept of extended value chain than networks, which might serve just market access intentions. On the other hand, multinational network are not bound by location like clusters. Due to the use of specialised resources, clusters tend to be seen as more industry-specific phenomenon than networks. These aspects offer further justification for the introduction of both concepts into the more holistic research framework.

Wood and forest industries form one of the leading clusters in Scandinavia and adjacent region. The activities in that cluster range from round- and paperwood trade to the production of fine paper and wooden furniture. The Nordic cluster initially formed in highly forested countries, Finland and Sweden, but now it is expanding to Baltic countries and Russia. This enlarged vision has been prompted by need to find additional sources for roundwood as well as by lower operating expenses in these regions. Although, this interest in making FDI in Baltic wood and forest companies has many good aspects – technology transfers, marketing possibilities and managerial competence, it might also lead to detrimental developments in terms of reduced autonomy and lower local cooperation.

The aim of paper is to study the dual influence of regional clustering on the development local/domestic clusters and networks. Thus, this study will clarify how the emergence of international network ties within Nordic cluster impacts the development of local relationships and integrated value chain.

The first section gives an overview of relevant cluster development and networking literature. In order to pinpoint the theoretical basis for more detrimental effects the discourse concerning MNC-s domination should be incorporated as well. Yet another stream of literature to be used in providing the theoretical rational behind business practice, is dealing with the corporate level strategic choices and autonomy issues.

This theoretical section is followed by the introduction of Nordic wood and forest cluster, and its position in the global market. The more general review of production and trade capacities based on Food and Agriculture Organization's (FAO) Forestry data should build a suitable background for short introduction of major players in Nordic wood and forest industries. The entire section, however, should form only brief introduction needed to understand the discussion of cluster relations.

The empirical section offers a multifaceted analysis of international and domestic network relations that characterize Estonian wood and forestry companies, based on case studies and survey data. Although Estonian market is very small in comparison, for example, to Russia, there have been several factors that have supported its earlier incorporation into Nordic cluster. These include higher cultural proximity, stable and liberal economic policy, accumulation of modernized production capacity based on domestic investments. This last aspect has enabled to successfully use acquisitions along with some greenfield investments. This discussion will incorporate some retrospective elements in order to outline the changes introduced by increased involvement of Nordic MNC-s.

In terms of research methodology, the paper will be based upon short case studies of Estonian wood and forest companies, whereas interviews with corporate managers serve as primary data, and surveys conducted among these research companies as secondary data. Numerous other public resources will be used during the desk research process. These triangulation efforts should provide enough alternative sources for making valid conclusions based upon the Estonian cooperative and internationalization practices. Several illustrative examples should also highlight the dual nature of regional intra-cluster cooperation. The remaining limitations should be addressed in the paper as well. In concluding section the subsequent managerial and policy implications will be provided. These should include measures for balancing the interest in building (national) competitive advantages with increasing cooperation on a regional level.

Regional clusters and their position in supporting innovative development

One of the characteristics of modern business is the formation of clusters. Business clusters have been defined in several ways. According to de Langen (2002, p. 210) a cluster is 'a population of geographically concentrated and mutually related business units, associations and public (private) organizations centered around a distinctive economic specialization'. This definition brings into spotlight the regional, relationship-based and specialized nature of clusters. According to this notion, a cluster is not unitary formation, but a population of several parties involved. Birkinshaw (2000, p. 93) defines clusters as 'geographic concentrations of interconnected companies and institutions in a particular field'. In essence, this definition is very similar to the previous one, although it is expressed in more general terms. Enright (2000, p. 114) describes regional clustering as 'the development of multiple firms in the same or closely related industries in the same location'. Although, this is even more general notion, it still stresses the industry specific and geographically connected nature of clusters. In Porter's (1998, p. 199) view a cluster is 'a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities'. This definition sets higher importance on complementarities between cluster members than previous statements. There is also a specific term for clusters that are in their rapid growth phase. These so called 'hot spots' are the fast-growing geographic clusters of competing firms (Pouder and St. John 1996).

In general, the cluster definitions introduced in literature differ in their geographic scope, breadth (horizontal industry scope or involvement of companies/industries on the same level of value-adding process), depth (vertical industry scope or involvement of companies/industries positioned on the different levels of value-adding process), activity scope, capacity for innovation, competitive position, industrial organization and transaction governance (Hallencrutz and Lundequist, 2003). At the same time, clusters have so many different dimensions that this concept can be used for explaining the factors that enable the long-term competitiveness of country or region, for the analysis of why companies agglomerate in specific location, for describing geographically concentrated complex production systems, or as a holistic approach to working with national and regional growth policies (Hallencrutz and Lundequist 2003). In author's view Porter's definition of regional clusters is most suitable for this study and will be followed unless pointed out otherwise.

Marshall (1916) introduced three fundamental reasons for special clustering (Birkinshaw 2000):

- (1) the existence of pooled market for specialized workers;
- (2) the provision of specialized inputs from suppliers and service providers;
- (3) the relatively rapid flow of business-related knowledge among companies, which resulted in technological spillovers.

Although, it is often very difficult to predict a priori the actual location, where this kind of spatial agglomeration companies will lead to the emergence of cluster, the subsequent growth of cluster is straightforward. New companies just have strong economic incentives, related to these three reasons; to co-locate with competitors and other related firms (Birkinshaw 2000).

De Langen (2002) on the other hand argues that the delimitation of cluster is not 'natural', but a construction process that generally starts by selecting a cluster core, which location does not depend strongly on the presence of other economic activities. In an opposite situation, these activities would be more appropriate as core. Moreover, a cluster core should consist of a spatial concentration of similar activities. As a second step of construction, the strengths of relationships and intra-cluster

activities, based on: (1) economic transactions with cluster core; (2) use of common cluster resources; (3) membership of cluster associations and (4) inclusion in regional learning systems, will be determined. Third step in cluster construction is oriented on delimiting the relevant cluster region. In that sense, clusters can be local (shopping district in a city), regional (London City financial district) or interregional. The process of cluster construction is summarized on Figure 1.

Alongside with a cluster formation or construction, the fading of clusters is equally important research problem. Pouder and St. John (1996) argue that main reasons behind clusters dissolution are institutional forces and cognitive homogeneity in companies belonging to the cluster. Although, initially economies of agglomeration, institutional forces and manager's mental models support the innovativeness within cluster, thus being its success factors, over time homogeneous culture emerges which suppresses innovation and starts gradually weaken the cluster.

*** Figure 1 here ***

The study of relationships between company's belongingness into cluster and its innovativeness showed that clustering alone is not conducive to higher innovative performance, although location among dense population of innovative companies increases likelihood of being innovative. However, quite strong disadvantages might arise from presence of non-innovative companies in the clustered sector. (Beaudry and Breschi 2003) Thus, the cluster facilitates innovation only when majority of key companies have innovative mindsets.

Enright (2000) has studied the role of industry clusters in the operations of multinational companies. He argues that instead confronting clusters to multinationals, clusters and multinational companies ought to be viewed as highly interdependent, because overall strategy of these companies receives strong impetus from cluster-based subsidiaries. The importance of local innovation systems in the development of global economy has also been pointed out by Mytelka (2000).

Maskell and Lorenzen (2004) view regional clusters as suitable spatial configurations of economy for the creation, transfer and usage of new knowledge. Thus, clusters can affordable alternatives to the formation of global networks. In some situations, where barriers make global networks less feasible solution, regional clusters can be utilised instead. Regional clusters use the capabilities available in several countries belonging to the region, whereas local/domestic clusters tend to induce industrial development in one country or even one county. Before we discuss the connections between networks and clusters, the next section will introduce the diverse views about the nature of business networks.

The networks and their connections with clusters

The Network approach emerged as a result of the criticism to sequential approach (see for example Madsen and Servais 1997; Tyebjee 1994; Reuber and Fisher 1997). The first element of the network approach to emerge was the relationship marketing concept, describing the long-term relationship between customer and supplier, one form of which is key account management. It has been defined as a way of achieving maximum sales from an identified group of external and internal customers (Wong 1998). Although having many features of the network approach, this kind of works only look at the relationship between the two parties, whereas the network involves awareness of others.

There are many definitions of networks. Thorelli defines network 'as the one intermediary between the single firm and the market, i.e. two or more firms which, due to the intensity of their interaction, constitute a subset of one or several markets' (Thorelli 1986, p. 38). Zeffane argues that networks are faster, smarter and more flexible than reorganizations or downsizings, thus to be considered as an alternative to vertical integration, or in other words internalization, for the high-growth entrepreneurial firms. Networks help to make bureaucratic organizations more innovative (Zeffane 1995).

In the modern era, the notion of a market versus an internalized hierarchy inevitably has to be extended to include the network approach as well as cooperative forms of internationalization in more general terms. There are cases when vertical integration, in terms of mergers with suppliers or retailers, is inappropriate, for example if transactions are only occasional and involve very specific assets (Johanson and Mattson 1987). However, that is not to say that internalization concepts are not

applicable. They have to be revised in a higher level of alliances and conglomerates. Indeed, internalization bears many similarities with deep-rooted network bonds (Roolaht 2001). The view that networks offer an alternative to market vs. hierarchy dichotomy is also supported by New and Mitropoulos (1995). Thus, networks as institutional arrangements are somewhat less strict than hierarchical intra-company arrangements, but still offer higher control and formalisation than market relations.

In a more theoretical view, the network approach has three main features: actor bonds, shared resources and integrated actions (Johanson and Mattson 1988). Actor bonds determine also the actor's network position. Network position has been defined as a semi-autonomous decision centre, that in most cases coincides with a firm, a strategic business unit, or a profit centre (Thorelli 1986). This position in a network can also change when competitive situation or market environment develops. A firm's position in a network determines its power in network and *vice versa*. The network bonds could be both vertical among the members of value-adding system and horizontal among actual or potential competitors (Piercy and Cravens 1995). This implies clearly that networks are not always forming value chains. Shared resources indicate that an actors' success in operating depends on other participants' choices. Inside the network, there could be competition for the use of common resources (Thorelli 1986). Integrated actions imply that networks can be viewed as economic entities, although much more complex than organizations.

In addition to three main dimensions, one aspect often mentioned is mutual trust. In many respects, networking is about building and reinforcing trustworthy connections between actors. This aspect of networks is especially important in Asian networks as indicated by several authors (Wong 1998; Haley and Tan 1999). Mutual trust is a basis for cooperation between competitors forming therefore links of co-opetition (Bengtsson and Kock 1999). These network aspects discussed clearly indicate the important role of highly-developed mutual dependencies in networks, which in case of clusters might be far less prominent.

The inward-outward connections in business networks depend on the strength and type of actor bonds, while the strength of bonds can increase according to changes in network environment (Johanson and Mattson 1987). Inward inter-company relationships are linked to similar outward connections by interaction between the departments and affiliates within a corporate structure, whereas intra-company links are of great importance. A dominating type of relationships, on the other hand, depends on industry, whereas activity based bonds are common in process, mature, and production industries, while actor bonds are more important in new high-tech industries (Håkansson and Johanson 1993). Given that in networks actor bonds are so important; it implies certain institutional efforts towards building and reinforcing them. This conscious approach towards relationship reinforcement is also more characteristic to networks than clusters

The network has also its network horizon. When we define network as a complex set of integrated relationships, then within the horizon are those connections in network, which are considered important by the actor. This forms its network context (Johanson and Johanson 1999) Therefore, although networks are separable, the network boundaries are very hard to define. Cluster boundaries tend to be somewhat more identifiable.

The feature of the classic network paradigm is that each member should be well specialized, independent, effectively organized and managed entity responsible for certain process or value-adding function (Verwijmeren et al. 1996). This implies that small entity is better than large organization. 'Because networks of co-operating organizations take the best of both market and hierarchy, they are capable of managing the additional complexity of business processes that is associated with increased product variety, higher customer service levels and affordable prices' (Verwijmeren et al. 1996, p. 18).

It is argued that the network approach helps to remedy many problems related to for example, transaction cost concept (see Johanson and Mattson 1987), and it is often looked on as an alternative to the internalization. The author of this current research believes that under certain assumptions those two concepts are not as different as they often are considered to be and therefore the attempt is made to highlight the similarities. In some instances, it is up to terminological differences. For example, Ghoshal and Bartlett differentiate between multinational network and external network (Ghoshal and Bartlett 1990). Under multinational or inter-organizational network, they mean 'a group

of geographically dispersed and goal-disparate organizations that include its headquarters and different national subsidiaries' (Ghoshal and Bartlett 1990, p. 603). This notion is obviously closer to the internalization concept than to the classic network approach. Some sources like (Peng and Heath 1996) treat mergers and acquisitions as strategic choices differentiated from inter-organizational or network relationships. This separation stems from the definition of network as an external network by Ghoshal and Bartlett. Mergers and acquisitions are in turn related to internalization and corporate networks. These definitions depend somewhat on the extent of managerial control gained in the process as well, where the network describes a less controlled situation and acquisitions higher ability to direct actions.

Similar differentiation is offered by Wills who discusses two phenomena, socio-intrapreneurship, which seeks to make the large organizations work better in order it to regenerate itself, and socio-entrepreneurship, which does not need a common organization and is just oriented towards achieving the shared purpose (Wills 1994). The first of them is obviously similar to the concept of multinational network and the second phenomenon relates to inter-organizational voluntary networks. Wills stresses the importance of well-defined leadership and financing in the process of making networks function. The need for extended management skills and abilities in terms of relationship building, negotiation skills etc. is also discussed by other authors (Buono 1997). Network as well as hierarchical organization has to be reinvented in order to be viable in the long-term. That notion offers one more similarity between the internalization and the networking concepts.

On the other hand, it has been argued that the network approach within corporate structure could lead towards more specialized, coordinated and integrated structure than for example decentralized organizations that use polycentric strategies (Malnight 1996). Although this view relies again upon the definitions of Ghoshal and Bartlett, we can see that sometimes the network approach might mean better coordination than internalized but still quasi-autonomous activities.

Buckley and Casson offer another interesting concept. They argue that as an economy does not grow as fast as it was decades ago, competition has posed new requirements on firms' effectiveness. Therefore, organizations tend to be not as fixed as they were or in other words organizations have 'fuzzy boundaries' (Buckley and Casson 1998), meaning that even large and diverse corporations tend to use third party suppliers and joint venture agreements, while having similar operations in-house, in order to keep internal suppliers competitive and increase effectiveness. Sometimes external partners may be internalized via mergers and some subsidiaries sold. In addition to that, corporations' supplier networks have many levels, so that it is very hard to determine what constitutes internal and what external network. This example shows that both approaches are interwoven even on the corporate level. Some credit to the inter-organizational forms of functioning is given also by internalization economist Oliver Williamson who acknowledges hybrid governance structures, in cases when units within the boundaries of the firm work together with economic units outside the corporate structure (Williamson 1991).

Although these concepts reviewed use the term network for describing intra-corporate rather than purely relational cooperative arrangements, it is still a shift from solely hierarchical subordination to certain partnerships within corporate structures. However, it is true that intra-corporate networks tend to be more formalised than just relational networks. Still, even inter-corporate networks, much like intra-corporate ones, tend to have clearly set codes of conduct.

In conclusion, while the classic network approach helps to avoid the concentration of administrative complexities that are characteristic with highly integrated hierarchies, it retains many elements of control and coordination. Thus, networked operations help to achieve a more effective and more competitive solutions in a higher level than intra-firm operations. At the same time specialization within the network helps to avoid organizational problems and to facilitate the changes needed in modern business environment.

Although far less location- or industry-bound than clusters; networks can be as well be divided into being multinational, regional and local. This division, however, relies upon somewhat arbitrary perception of network boundaries, which are often fuzzy. Multinational networks cover several regions or continents, while regional networks are established within a region, for example Northern America. Local networks refer to domestic or even more local networking ties. In this study local and intra-country networks are used as synonyms.

Although, Maskell and Lorenzen (2004) see networks as formations with much stronger bonds between members than in clusters (in their view cluster is in short a loosely integrated social setting (environment)) (see Table 1), the differentiation between the two is often not that straightforward. In fact, considerable overlaps are visible. Maskell and Lorenzen (2004) imply it too by denoting networks as institutional arrangement and clusters as institutional environment. Indeed, it is possible that in regional or domestic cluster, there emerge several different partnership arrangements among companies. Thus, in time, co-location of companies can become an important facilitator of networking.

*** Table 1 here ***

Moreover, occasionally one cluster of companies might consist of several competing networks, whereas rivalry between them could even support the innovative spirit within cluster. From different viewpoint, this is also the reason, why regional cluster with its networks and domestic cluster, defined from this point forward as host country cluster, can have conflicting development interests. These conflicts could be related to the domination of multinational corporations (MNC-s) in local industries and to the subsequently reduced strategic autonomy of its local subsidiaries or allies.

Rondinelli and Black (2000) address the issue of MNC-s entry into emerging markets in Central and Eastern Europe via acquisitions or alliances with private or state-owned companies. They argue that these relational or even ownership ties can render to MNC-s many competitive advantages in transition environment. However, because host country interest groups often oppose foreign domination in domestic industries, MNC-s should build win-win arrangements that benefit not only their shareholders but also host country partners and governments. Thus, the domination issue formerly discussed in connection with developing countries (for example in Galloway and Kapoor 1971) has now found attention also in transition setting, where local companies alone might be too weak or unwilling to withstand the pressure from large multinational corporations. Still, following the suggestion given above, MNC-s themselves are often better off by accounting for local interests as well. Despite it, the conflicts between host country's industry interest and MNC development prospect are possible and cannot always be avoided.

The foreign expansion aspirations of a company are in some instances considerably supported or inhibited by its inclusion into the larger intra-corporate network or by its belongingness into regional business cluster. Then, a local company can fulfil different kinds of management tasks. These tasks determine the subsidiary's role, and subsequently it's autonomy within a multinational corporation, which could be strategic or functional.

Strategic decision-making is often seen as the role of corporate headquarters or top management (Raelin 1989). On the basis of this traditional understanding, strategic autonomy could be defined as the high independence in determination of corporate mission, goals and future directions. However, several contributions (Hedlund 1980; Hamel and Prahalad 1983; Williams 1998; Andersen 2004) imply to slightly different definition. Strategic autonomy is the high decision-making authority of corporate unit as an integral part of corporate strategy. Thus, strategic autonomy, in this form, refers more to the autonomy granted by corporate level strategy, and not necessarily to the ability to independently determine the corporate level strategy. Nevertheless, these strategically autonomous subsidiaries and other units have considerable role in co-determination of corporate mission, goals and future directions. It is this more elaborate definition of strategic autonomy – autonomy within the strategy – that will be adopted in this research.

Due to an increased need for integration between subsidiaries, brought on by globalisation, or alternatively due to the need for increased local responsiveness (Hamel and Prahalad 1983), the strategic roles of subsidiaries become increasingly specialised. Some units are assuming the coordinating functions of (regional) headquarters, while others constitute arms-length operations. In terms of domestic industry cluster arms-length units have often lower local responsiveness and favour intra-corporate ties over local partnerships. The theoretical construct, discussed so far, is summarized on figure 2.

*** Figure 2 here***

The circles on that figure represent clusters. Big circle is regional location that covers several neighbouring countries that contain in turn domestic industry clusters (smaller circles). Rectangles are either intra-corporate or relational networks. The overlaps on this figure describe the interests on several levels of regions. MNC, for example, has also operations outside this particular region and in both local clusters. Arrows imply the domination of positive or negative influences of corporate networks on clusters. Similar arrows could be drawn for regional relational network, but are omitted for the better clarity of the figure. The empirical part of this paper intends to offer preliminary evidence about these connections; the results will be introduced in concluding section. However, before that, we will shortly describe the role of Nordic wood and forestry cluster. This should be viewed as background information that should enable to facilitate the better understanding of cluster's development logic within the wider context of global economy.

The position of Nordic wood and forestry sector

Though considered to be one of traditional industries, wood and forest industry has retained its strong position in world economy. The first proxy to look at would be the percentage of forests and woodland from total land area. As can be seen from figure 3, the Nordic countries Finland and Sweden have very high ratios of forestation. Malaysia, Brazil, Indonesia have very high ratios too. Canada, Russia, Baltic States and US have forest areas somewhat below 50%. The ratio for the whole world indicates that about one-third of total land area is used as forests and woodland.

*** Figure 3 here ***

According to the data of Food and Agriculture Organisation (FAO) in the beginning of 1990s world's production of industrial roundwood declined from 1.7 billion cubic metres in 1991 to less than 1.5 cubic metres in 1994. Thereafter production gained new, although more volatile, impetus and by 2002 the production level was close to 1.6 billion cubic metres (FAO, 2003). From Table 2 it is evident that production of coniferous industrial roundwood has somewhat declined in US, while the production in Canada, Finland, Sweden, Germany, and Baltic States has increased.

*** Table 2 here ***

In production of non-coniferous industrial roundwood, however, other regions, like Asia, have much stronger positions (see again Table 2). The production amounts of Russia and US reveal changes in both directions, where decline by 1997 has been followed by growth or *visa versa*.

In production of sawnwood, the biggest decline has been characteristic to Russia. Sweden, Finland, and Baltic States have in turn increased their production of sawnwood. Thus, the Nordic cluster is gaining in importance. The largest producers of wood-based panels were in 2002 US, China, and Canada. More detailed look reveals that Canada's strength lies in the production of particle boards (around 11.3 million cubic metres in 2002) and China's advantage in production of plywood (around 12.2 million cubic metres in 2002).

In the segment of wood-based panels, the Nordic cluster of wood and forestry is much less developed. Though growing, the production in Baltic States was only around 1.1 million cubic metres in 2002. The most noticeable increase in production paper and paperboard (see Figure 6) is again characteristic to China (from 20 million metric tons in 1992 to 37.9 million metric tons in 2002). In this segment Finland and Sweden have medium importance, while the production in Baltic markets has been almost non-existent.

In terms of monetary value of forest products exports, there has been certain decline from the 1995 high of US\$ 148,000 million to around 136,000 million in 2001 (FAO, 2003). But, all in all, during last 30-years there has been considerable increase in production and exports. For example, when in 1970 only about 1.28 billion cubic metres of industrial roundwood were produced then in 2002 the level was close to 1.6 billion cubic metres.

Forestry has become increasingly global. Ownership of forests and processing plants, concession rights, and harvesting management contracts, are increasingly held by foreign companies. Trade is

also increasingly global with the number of countries exporting and importing different products growing (FAO, 2004).

In the next sections the primary attention will be given to the Nordic forestry cluster and its expansion towards nearby emerging markets, namely Baltic States. However, before introducing the evidence, the research methodology and data will be explained.

The research methodology and data

Because this empirical analysis deals with managerial processes and perceptions about positive or negative impact of clustering, the main research method utilized is the exploratory case study analysis. This method helps to obtain elaborate insights about the motivations, beliefs, and experiences of corporate level managers who have been responsible for the internationalization process in their companies. In order to generalize from the results of inter-case analysis, the case data are in some occasions amended by survey data.

The method of case study analysis has been scrutinized by Robert Yin. According to him (Yin, 1992) case study is an empirical inquiry that:

- investigates a contemporary phenomenon within its real-life context; when
- the boundaries between phenomenon and context are not clearly evident; and in which
- multiple sources of evidence are used

In the case of the present study, the phenomenon under investigation is the interplay between regional and local cluster. Therefore, it is an exploratory study that attempts to determine the diverse impact of clustering on local level cooperation. Further explanation of exploratory type of case study can be found in Yin (1994). In order to draw upon intra-case as well as upon inter-case evidence the multiple case study analysis was selected as sub-method. Intra-case narrative helps to highlight the specific features of phenomenon in that particular unit of research, while inter-case evidence offers an opportunity to make generalizations based on common features of all or a majority of case companies. The selection of case companies was based on theoretical rather than statistical sampling. The main theoretical considerations were related:

- to the field of activity (to involve several aspects of wood and forest industry value chain);
- to company size (having representation of big companies and SME-s);
- to the type of inward connection (companies with foreign ownership or other relationships);
- to the level of foreign commitment (having companies with considerable exporting activities or other international activities).

Given these criteria, the selection was not completely random but depended somewhat on the availability of alternative sources of evidence (participation in earlier surveys; level of exposure in the media; availability of corporate homepage etc.) and on prior contacts. This should be viewed as one important limitation, because there is potentially some selection bias towards inclusion of well-known companies, which tend to be also leading companies. On the other hand, the author considers this kind of sampling justified because it allows for a more extensive use of scarce public data and secondary evidence, thus increasing the construct validity, while the diversification of the sample should increase the external validity and reliability.

Four companies were included in the sample, two of which are sawmilling companies (with some wood procurement activities), one pulp & sackpaper producer and one manufacturer of windows and doors. The interviews with managers were made in autumn 2003. The survey data was collected in March 2005 by fax and e-mail. Because the survey is still in progress final response rate has yet to be determined but at this stage dataset includes 60 Estonian wood and forest companies. This survey was initiated as complex survey of entire sector. Thus, this study uses only a small fraction of information concerning cooperative ties.

The positions of Estonian companies within Nordic wood and forestry cluster

Toftan Sawmill

Toftan is a manufacturer of sawnwood that started operations in 1995. The company is co-owned by Swedish sawnwood manufacturer Hebeda Trä AB (60%) and Finnish wood procurement company

Thomesto OY (40%). The case company has been foreign-owned from its inception. Toftan employed in 2003 around 111 people and produces annually about 107 000 m³ sawnwood (2002). The company is specialised on pinewood and exports to Egypt (13% from its turnover), Netherlands (11%), Morocco (9%), Japan (9%), and Ireland (7%). Toftan's turnover in 2003 was about 15.7 million euros and net profit around 1.2 million euros. Although, Finnish company has only minority ownership in sawmill, the important role is played by its wood procurement subsidiary Mets & Puu, which supplies Toftan with roundwood. Thus, the wider corporate network of Thomesto, and its parent company Metsäliito, provides Toftan with a procurement support. Toftan has also received long-term financing from both owners and cooperates in sales with Hebeda Trä AB. Company can use also Swedish sawmills as a base for training its employees.

According to CEO of Toftan, during the start-up period, the management and key employees came from Swedish parent company, but during ten years of operation the strategic involvement of foreign owner has been reduced to joint discussions of development strategy in board meetings. During first five years of operation, Swedish owner provided Toftan also with expatriate sales personnel. As the domestic sales increased, the need for Swedish salesman diminished. By now Toftan has gained considerable strategic autonomy in its operations, because Swedish owner has delegated several management tasks to local managers.

Since 2001 company has devoted more attention to serving domestic producers, while earlier the export activities were set as sole priority. Thus, company has started to more consciously position itself as a supplier in local value-chain of wood-based products. In fact, some of these consumers (producers of wood-based panels) have also located themselves close to Toftan. At the same time, the cooperative relations with Estonian logwood house producers have proved to be more problematic, because the timber type mismatches and payment aspects. The company's contacts with direct competitors are related with membership in professional union, but also with export sales in very distant market, Egypt, where Toftan uses Stora Enso's distribution channels.

Sylvester – Stora Enso

Sylvester Ltd. was established by four Estonians in 1990. In 1991 and 1992 five more employees of the company became co-owners. The company's activities ranged from wood procurement to sawmilling. Especially important step in the history of Sylvester was the successful participation in greenfield investment into Imavere Sawmill that was established in 1994. This sawmill started regular production in 1995, and is now the largest sawmill in Baltic countries with sawing capacity of 400,000 cubic metres per year (see also Table 3). It is interesting to note, that Enso acquired a minority share of close to 20 percent in Imavere Sawmill already in 1995. Thus, the market entry process started already in mid-1990s, although the initial commitment was relatively low.

The second-largest sawmill of Sylvester in Paikuse was established in 1997 (see Table 2 for capacity). At first the main focus was, as it had been also in Imavere, on increasing the sawing capacity, but now the focus of further investments is on quality improvements (Homepage of Stora Enso, 2005). Although, Näpi Sawmill – the third-largest production company of Sylvester in Estonia – was established already in 1991, it has received several investments into modernised equipment and other technological solutions. The Sauga Sawmill established in 2000 was initially used for processing non-coniferous wood, like black and grey alder or aspen. However, in 2002 sawing of these species was terminated and sawmill started to process coniferous roundwood (Homepage of Stora Enso, 2005).

*** Table 3 here ***

Soon Sylvester started also investments into Latvia and Lithuania. Launkalne Sawmill in Northern Latvia was established in 2001 and started regular operations in 2002. The newest sawmill, finished already after the acquisition by Stora Enso, is Alytus Sawmill in Lithuania that started operations in September 2003 (Ibid.).

In addition to these sawing capacities established in Baltic market, in 1997 Sylvester had acquired Viljandi Component Mill producing door and window components, finger-jointed and multi-layered glued blanks, and other construction materials. The Sylvester Group consisted by 2002 also from several affiliate companies offering vital procurement or supporting services. The business policy of

Sylvester had been to not require whole or even majority ownership in these companies, but to expand its network of activities by minority partnerships and mutual interest.

However, when the owners of Sylvester received an acquisition offer from Stora Enso, the equity of Sylvester was expanded using targeted issue so that the owners of affiliated companies became co-owners of Sylvester Group. Thus, the circle of owners was increased from 9 to 97 people, who all signed the acquisition agreement with Stora Enso. This consolidation of ownership was needed in order to successfully implement the acquisition process. According to the agreement, Stora Enso acquired 100% of Sylvester's wood procurement operations in Baltic States and 2/3 or 66% ownership in sawmilling operations. Although, the exact numbers were never disclosed, the price of this deal has been estimated to be close to 127.8 million euros.

Despite the fact, that in Baltic sawmilling Stora Enso acquired only majority ownership this step has considerably reformed the geographical distribution Stora Enso's wood producing capacities. The Baltic States, especially Estonia, have now very important share in Stora Enso's sawing capacity portfolio. In order to reinforce the potential of newly acquired production sites, Stora Enso decided to follow through the investment plans in Lithuania, started already by Sylvester, by investing around 20 million euros in total into Alytus Sawmill. Further 30 million euros was invested into Estonia and Latvia, in order to facilitate the increase of production capacities and improvements in quality. The intention was also to increase the processing capacity in addition to existing sawing capacities.

At the moment, Stora Enso's sawmilling and procurement capabilities tend to dominate the market in Estonia. It has also been pointed out by competitors and local consumers that the management of sawmills and procurement units throughout Estonia has become more centralised. For example, the logistics of sawnwood exporting is now governed by Stora Enso's specialised business unit rather than by sawmills' managers. All in all, this has led to certain detachment of the group from domestic cluster and network, because intra-corporate coordination as taken priority over local involvement.

Horizon Pulp & Paper Ltd

In the year 1934 the Estonian government started the planning towards building a new pulp mill in Estonia. The very first calculations showed that it would be much wiser to utilize the country's vast renewable wood resources by converting them to pulp instead of just selling them as a raw wood primarily to our sister countries of Sweden and Finland. On the 25th of August 1938, the new sulfate pulp mill in Kehra was inaugurated. In the summer of 1940, Estonia was occupied by Soviet troops and incorporated into the Soviet Union. Sales of pulp were redirected to the East through railways. After the World War II, and German occupation from, 1945 all the production of the mill was again diverted to the Soviet Union. In the middle of 1950s company added an integrated paper and sack plant, in order to convert all the pulp in the mill into finished product. In 1989, Estonia started its struggle for independence and separation from the Soviet Union. The economy of the USSR started to deteriorate and both sale of paper as well as procurement of raw material became difficult. Monetary payments were replaced by barter deals. On March 1st 1993 the plant was designated for liquidation. After evaluating the situation in the plant, it was decided by bankruptcy manager, that it would be necessary and important to Estonia to keep the only pulp and paper mill in Estonia alive and search for a new investor started (Homepage of Horizon Pulp & Paper, 2005).

Finally, investors from Singaporean company Tolaram Group acquired it in 1995. Tolaram has since then invested significantly in achieving new heights in quality, efficiency and environmental protection. Tolaram Group is an International group with vastly diversified activities that range from its core business of manufacturing textiles, fibers and polymers to trading distribution, pulp and paper and real estate. The group headquarter is in Singapore and it has operations in more than 20 countries in Asia, Africa, Europe and in America. Horizon Pulp & Paper Ltd is now a stable, independent company, which has a long experience and tradition of unbleached pulp & sackpaper production. Some key financial figures of the company are shown in Table 4.

*** Table 4 here ***

According to Horizon's executive director the supply base of company is broad consisting of several sawmills and procurement companies in the range of 150-160 km from Kehra. Company buys wooden chips as well as roundwood, because company has also its own wood barking equipment. However,

the acquisition of Sylvester by Stora Enso has also influenced Horizon's procurement possibilities. Although, company still purchases some chips from Imavere Sawmill, the prices of roundwood offered by Stora Enso increased too much. In addition to that, Stora Enso's aggressive procurement policy has also contributed to the supply problems that emerged with other suppliers of wood. These suppliers found it difficult to fulfill their contractual obligations because Stora Enso's procurement units had intensively brought available wood, leaving other companies in shortage. In that sense, internalization of Sylvester into Stora Enso had direct as well as indirect impact on Horizon's purchasing activities.

Viking Window Ltd.

Viking Window Ltd. was created as a joint venture between local company and Danish window producer. In addition to these two companies, about third of shares was owned by the investment fund providing venture capital. The relationship between partners was successful because the foreign partner provided leading-edge technology, while local management was instrumental in building up modern production facilities on the new developing market. In addition to the improvements in the quality of internal business processes, the success of cooperation could also be seen from financial performance. Viking Window Ltd. began to produce quality wooden windows and entrance doors in August 1997. In 1998, the export turnover was about 612 000 euros and the turnover in the Estonian market was about 345 000 euros. The turnover for 1999 was already close to 1.8 million euros. The turnovers for following years were as follows – 2000: 2.3 million euros, 2001: 3.06 million euros, 2002: about 4.4 million euros, 2003: 4.8 million euros from which about 2.4 million euros was export turnover (Homepage of Viking Window, 2005; Viking Window Annual Report, 2003).

The foreign investment fund had already initially planned to withdraw after a period of time, what it also did. At some point, the management of Danish partner changed and the new management team opted for buying out the shares of local partner in the joint venture. This was not in accordance with initial agreement, which did allow local partner to increase its shares in company. When the foreign partner made a proposition for the intended full ownership, Estonian found means to raise enough money in order buy out foreign owned shares instead. Thus, Viking Window Ltd. is now 100% Estonian company. However, despite the changed ownership good relations with foreign experts, affiliated to the previous management of the foreign company, were retained for extended period in the form of management contracts. In export markets company has representatives in Stockholm, Gothenburg and Oslo. Viking Window Ltd. was designated ISO 9001 compliant in April 2000. Company has cooperation with Toftan and Stora Enso's Imavere Sawmill, as well as with wooden house producer Kodumaja.

Because company needs for its production process only sawnwood with exceptionally good quality, the close cooperation with suppliers is often very important. Sawmills have to make an extra effort to select and stock products suitable for production of high-quality wooden windows. Company chairman described a situation where Imavere sawmill, that is located close to Viking Window, even pre-selects material, but then Stora Enso's central coordination directs it to export rather than to be sold locally. In general, Viking Window has found it difficult to agree with local sawmills on the quality requirements of inputs, and therefore considerable share of materials will also be imported.

The survey of Estonian wood and forestry companies

Because the survey is still in progress, here only very preliminary results will be introduced in order to generalize and verify the case evidence described above. 3 companies from 60 reported that withdrawal from some foreign market has been directly related with the strategy of company's foreign owner. In that respect, the role of foreign parent companies is not dominant but still existing. In terms of turnover, products are mostly sold to third-party foreign companies or to third-party (not affiliated) Estonian companies. Only one company reported parent company's foreign affiliates as main sales channel. Thus, in terms of direction sales seem mostly non-corporate, at least when pointing out final recipient. On average about 68% of goods is sold to permanent partners, whereas again third-party companies rather than corporate affiliations dominate. Estonian wood and forest companies make about 80% of purchases from permanent supply partners, which are again predominantly non-affiliated foreign or domestic suppliers. This result should be interpreted with caution, because at present the sample includes mostly more independent smaller companies and several large companies have not yet responded or would not disclose their views.

However, 5 companies have cooperation with domestic procurement unit owned by their foreign parent, and 3 respondents with parent's production company or further processing unit in Estonia. Yet, only one company reported cooperation with foreign parent's subsidiary in Nordic countries, and one elsewhere. In this sample of companies cooperative ties with other Estonian, Nordic or just foreign supplier, production, further processing or sales companies are much more common than with parent's units. For example 35 out of 60 companies reported cooperation with other supply companies in Estonia, 37 with production companies and 32 companies with other Estonian sales companies. About 5 companies had cooperation with non-affiliated Nordic suppliers and 5 companies with Nordic producers. Despite the reported low importance of cooperation within intra-corporate network 11 companies out of 60 explicitly found that cooperation with parent and its other units is rather important or very important, but yet again cooperation with suppliers, clients and even with competitors and other companies in sector was seen as very important by even larger number of companies. Cooperation is mostly inhibited by competition (30 companies pointed it out as rather important or very important obstacle) or by lack of trust (37 companies said it to be rather important or very important problem).

To conclude, unlike in case of big companies like Stora Enso and Toftan, smaller Estonian wood and forest companies rely much less on intra-corporate Nordic networks and much more on the local relational network, which indicates that regional cluster influences them more indirectly (competition for forest resources) than large players, who have direct corporate support and restrictions.

Discussion and Conclusions

The case evidence indicated that Nordic companies from Finland, Sweden and Denmark have had considerable role in the development of Estonian wood and forestry sector as domestic cluster. These owner companies have supported technology transfers into Toftan, Viking Window and former Sylvester. In all these cases ownership ties have also facilitated access to foreign markets. However, after these initial similarities all three companies have found different development paths. Toftan is still foreign owned and vertically related with owner's wood procurement subsidiary. Despite that company is managed in decentralised fashion and as a result increasing its role in domestic cluster of further processing activities. Former Sylvester, who gained dominant position in Estonia already prior to acquisition by Stora Enso, has now been to the great extent merged into the intra-corporate network of Stora Enso group. Being part of MNC has, according to its local customers (Horizon Pulp & Paper; Viking Window), reshaped its policy towards regional corporate priorities, which has in certain situations complicated Stora Enso's relationships in local wood-based value chain. In fact, it is first and foremost the market domination of Stora Enso's Estonian units that has created slight conflicts between interests of regional cluster (wood procurement in Estonia for own usage and exporting purposes) and domestic cluster (wood procurement for further processing before exporting). Although, it is fair to point out that Toftan's relationship with its procurement partner offers a situation of rivalry between Metsäliito and Stora Enso for forest resources.

Horizon pulp & paper offers indication about yet another impact of Nordic cluster. Namely, this company has no Nordic ownership, and has to compete for wooden chips and other inputs with exports of Stora Enso into papermills in Nordic countries. Thus, from the viewpoint of regional cluster high-end value adding operations are not facilitated in Estonian domestic cluster, and can be even hampered by price increases that result from aggressive procurement policies.

However, as preliminary survey evidence indicated, these cases offer only part of the story. On the basis of sample that contains 60 Estonian wood and forest companies, which are less prominent market actors, it was revealed, that for several companies, networks with non-affiliated foreign and domestic suppliers, producers and distributors are more important than these with parent company's units. Since the survey is still in progress, one should exercise caution in generalising these results. Still, there is an indication that detrimental effects of MNC domination concern smaller players more indirectly, than focal domestic competitors addressed with cases.

This research has several limitations. Because case selection was based on the theoretical sampling, there exists possibility of certain selection bias towards better known companies. Although, the information collection procedures involved both desk research as well as interviews with managers,

the more holistic picture would require further collection of information. The interviews were made also earlier than the survey, which further complicates the comparability between the two. Because survey is in fact still in progress, the evidence presented is also very preliminary and more detailed connections are to be identified in the future. The generalisation based on four company cases should be verified with the follow-up studies as well. The fast changing business environment of Estonia after EU enlargement might have introduced some important changes in companies' strategies.

In the light of Figure 2, we can draw following theoretical implications. Regional clustering can indeed have both positive and negative influences on the development of local/domestic sub-clusters. Although, Maskell and Lorenzen (2004) differentiate between networks as strong form of cooperation and clusters as co-existence with weak bonds, this research advances a view that networking within regional cluster, and also rivalry between networks, can considerably support cluster development, while having possibly some detrimental effects. Thus, international marketing and purchasing activities in a regional cluster are often related with the complex interplay of relational and intra-corporate networks (MNC domination), changes in actors' autonomy and local versus regional development interests. These are the factors that in extreme situations might start to facilitate the dissolution of clusters (tension between actors starts reduce regional advantages). Because of these somewhat intrinsic factors, regional clusters should be further deconstructed into smaller units of analysis, which help to capture both environmental and relational logic behind cluster formation.

In terms of managerial implications, this contribution points at the need to find medium-term balance between regional (or global) coordination within corporate network and local win-win arrangements, which are important for preservation of the cluster's integrity. In that sense Toftan's local supplier - global exporter mix offers better example of management practice, than Stora Enso's corporate interests first attitude. Due to logistic considerations local value adding is in wood and forestry often more beneficial than immediate exporting (value to weight ratio supports further processing). Management of a forestry company should use stepwise positioning: 1) our position on global market; 2) our position in key regions; 3) our position in local clusters. This process could be guided by detailed plotting of value adding processes and supplier-distributor partnerships.

The future research of regional clusters and vertical integration within them should aim for a closer integration of location aspect and companies' features with networking aspects. Intra-cluster competition of not only companies but also sub-hubs (for example countries involved in cross-border cluster) should be investigated further as well. The notion of 'flagship' company in regional cluster is well known. In a more disintegrated level, important local players or 'tug-boats' could be identified and their role in a cluster explained. The relationship between MNC and regional clusters, has found some research attention, but the ways how global interests might harm cluster cooperation on a regional level are yet to be explained in detail.

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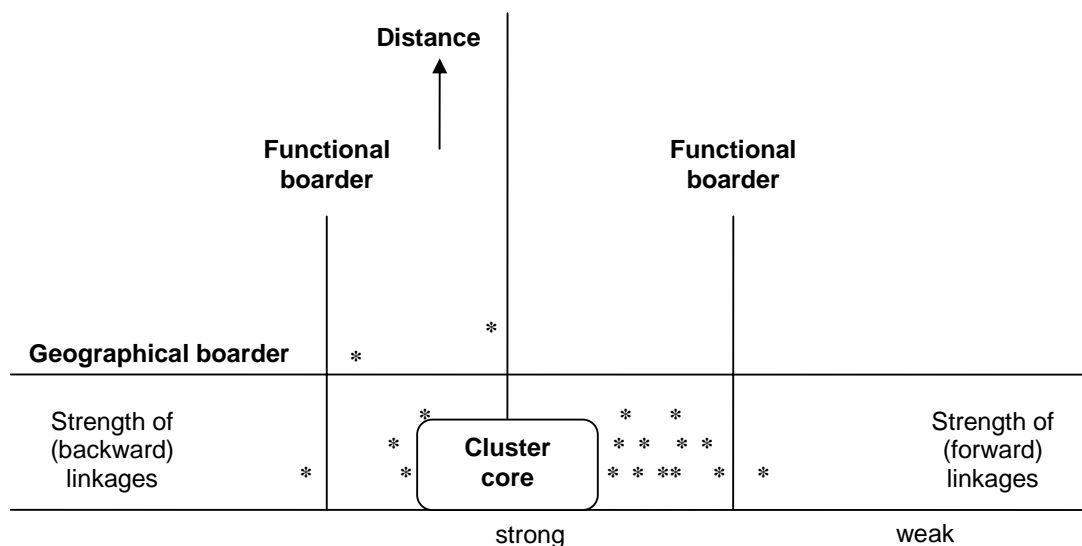


Figure 1. Constructing a cluster (Source: de Langen 2002, p. 211)

Tabel 1. Networks and clusters as forms of market organisation

Networks	Clusters
Institutional 'arrangement'	Institutional 'environment'
Firms as shareholders	Firms as stakeholders
Strong ties	Weak ties
Club institutions	Social institutions
Trust, sunk costs	Social trust, reputation
Codebooks	Social codebooks

Source: Maskell and Lorenzen 2004, p. 996

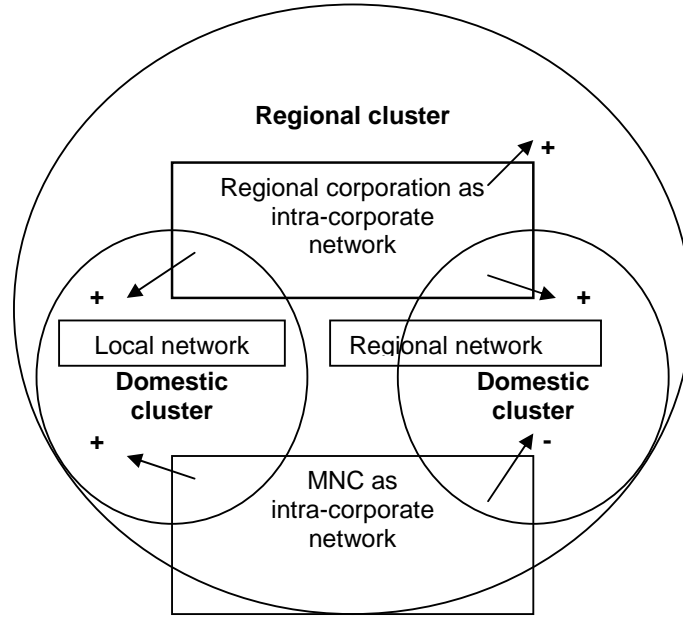


Figure 2. Interplay of relational networks, MNC networks and clusters on regional and local level

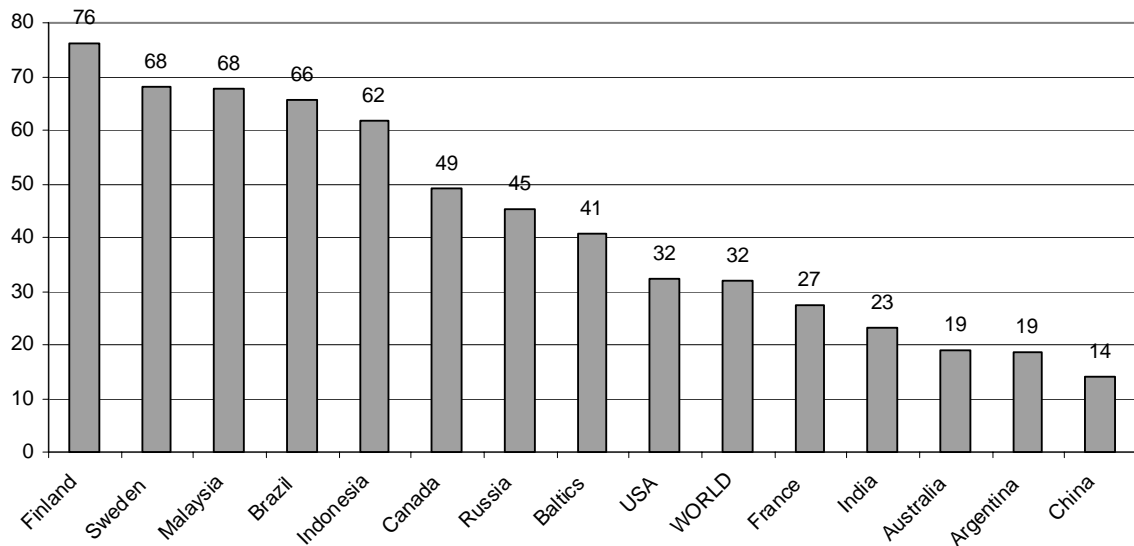


Figure 3. Percentage of forests and woodland from total land area, 1994 (Source: FAO Forestry Database, 2005)

Table 2. The production amounts of wood and wood-based products in selected countries

<i>Production of coniferous industrial roundwood in millions of cubic meters</i>			
	1992	1997	2002
USA	286.4	277.6	275.8
Canada	146.7	159.99	162.5
Russia	118.0	62.8	85.7
China	59.5	68.9	59.7
Sweden	44.8	52.5	58.1
Finland	30.5	41.8	42.5
Germany	21.9	29.5	29.96
Baltic countries	3.6	9.2	16.5
<i>Production of non-coniferous industrial roundwood in millions of cubic meters</i>			
	1992	1997	2002
USA	116.7	138.5	128.9
Brazil	46.3	51.6	63.3
Russia	46.0	25.5	39.7
Malaysia	44.8	32.5	17.9
Indonesia	42.6	44.99	32.8
China	33.3	38.1	33.4
Canada	16.8	25.9	34.9
Finland	5.1	5.5	6.1
Sweden	4.95	3.9	3.5
Baltic countries	1.3	4.7	9.2
<i>Production of sawnwood in millions of cubic meters</i>			
	1992	1997	2002
USA	107.9	111.4	89.2
Canada	56.3	64.6	57.6
Russia	53.4	20.0	19.2
Brazil	18.6	19.9	21.2
Germany	13.5	14.7	16.9
Sweden	12.1	15.7	16.6
Finland	7.3	11.4	13.4
Baltic countries	1.2	4.7	7.1
<i>Production of wood-based panels in millions of cubic meters</i>			
	1992	1997	2002
USA	31.2	40.1	40.5
Indonesia	10.6	10.2	12.6
Germany	8.9	11.9	13.8
Japan	8.3	7.4	4.9
Russia	7.5	3.3	5.6
Canada	6.6	11.3	16.2
China	4.9	14.6	24.7
Malaysia	3.5	6.5	6.8
Baltic countries	.54	.82	1.1
<i>Production of paper and paperboard in millions of metric tons</i>			
	1992	1997	2002
USA	75.1	88.5	81.8
Japan	28.3	31.0	30.7
China	20.1	31.7	37.9
Canada	16.6	18.97	20.2
Germany	13.2	15.9	18.5
Finland	9.2	12.2	12.8
Sweden	8.4	9.8	10.7
Russia	5.8	3.3	5.9
Baltic countries	.14	.076	.18

Source: FAO forestry database, 2005

Table 3. The Key Figures of Stora Enso Wood Processing Companies in Baltic States

Mill	Location	Sawing Capacity 1000 cubic metres	Further Processing Capacity (1000 cubic metres)	Employees
Imavere	EST	400	60	230
Paikuse	EST	220	-	135
Näpi	EST	150	60	125
Sauga	EST	120	60	110
Launkalne	LAT	215	-	129
Alytus	LIT	180	80	104
Viljandi	EST	-	10	50

Source: Stora Enso Annual Report, 2003

Tabel 4. The Key Financial figures of Horizon Pulp & Paper (in thousands euros)

	1998	1999	2000	2001	2002	2003	2004 *
Paper production (t)	42,525	47,698	51,943	53,163	62,054	63,864	65,659
Turnover	19,872	24,225	31,058	32,956	38,478	38,635	36,571
Operating profit	1,132	1,801	5,593	5,545	7,598	6,846	2,327
EBITDA	2,164	2,994	6,746	6,931	9,238	8,936	4,419
Current Ratio	1.68	1.37	1.94	0.91	1.06	1.44	1.40
Long-Term Debt to Equity Ratio (%)	42	48	86	85	52	35	30

* 2004 are unaudited numbers

Source: Homepage of Horizon Pulp & Paper, 2005