

Modernisation of Russian Pulp and Paper Industry: Lessons from Finland

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This paper is based on a forthcoming PhD Thesis
*Drivers and Barriers to Modernisation in Russia. Energy Use of Pulp
and Paper sector in Karelia and Archangelsk Regions.*

ABSTRACT

The inefficiency of energy use by the Russian pulp and paper sector peaked in the mid-1990s, and as the situation is now normalising to the pre-transition levels, it is time to focus on how further improve the efficiency of energy use by modernising the sector. As the Finnish pulp and paper sector is more energy efficient than that of Russia, Finland can provide lessons which factors can drive the modernisation of the sector, and which issues may deter it. This paper looks at the drivers and barriers to modernisation of pulp and paper sector in Finland and in Russia, and draws lessons from Finland how to support modernisation of the sector in Russia. The main differences of the sector between the two countries include ownership structures, energy prices, economic and legal systems, and governance practices of state and regional administrations. The main lesson from Finland to Russia is the better coordination of policies, and in the case of Russia, economic and administrative reforms. Currently, the basic building blocks for energy saving – price of energy which would encourage saving and longer term planning by businesses – are missing in Russia. Single measures cannot improve the situation, and therefore, a coordinated approach is needed. The paper is based on a PhD research during which 13 plants were visited and interviewed in the Russian regions of Karelia and Archangelsk, and in Finland. The main methods of qualitative analysis were drivers and barriers comparison.

Introduction

Energy efficiency has been a topic of discussion and focus of policies in the OECD since the 1970s oil crises. However, the issue is fairly new in Russia as a result of the Soviet attitude to energy consumption. As the country was rich of energy resources, almost no attention was paid to the efficiency of energy use (Rautava & Sutela 2000, p.31). The result is the well acknowledged inefficiency throughout the economy.

The inefficiency of energy use by the Russian pulp and paper sector peaked in the mid-1990s, and as the situation is now normalising to the pre-transition levels (Korppoo, forthcoming), it is time to focus on how further improve the efficiency of energy use by modernising the sector. As the Finnish pulp and paper sector is more energy efficient than that of Russia, Finland can provide lessons which factors can drive the modernisation of the sector, and which issues may deter it.

No well-established method to analyse *drivers and barriers* was available in methodological literature, however Sorrell et al (2004) have worked on the methodological side of barriers to energy efficiency. Critical analysis of the material collected by interviewing representatives of pulp and paper production units was conducted by systematically filing the data available of the drivers and barriers to modernisation in the case study database under themes, and later categories, emerging from the material (Berg 2001, p.103). Six main issue clusters emerged from the interview material: funding, corporate policy, technology and raw material, energy saving and other policies, energy prices and tariffs, and market signals. An additional category on transition and attitudes was added to the analysis of the Russian plants.

The paper is based on a draft PhD Thesis. Semi-structured interviews were carried out with 13 plants in the Russian regions of Karelia (4) and Archangelsk (3), and in Finland (6). *Modernisation* was chosen as the main concept of this study because both capital cycle and retrofit of existing production capacity with or without the motivation to improve energy efficiency or save energy were targeted. In the case of pulp and paper industry, energy efficiency improves over time if production related capital cycle investments are carried out frequently. The largest changes to energy consumption are

caused by such investments rather than specific investments in energy saving or improving energy efficiency. However, capital investments that improve energy efficiency may lead to higher energy consumption as a result of increasing energy intensity. These issues would have been difficult to address when focusing on energy efficiency only.

Pulp and paper sector in Finland and Russia

Pulp and paper sector is characterised by its wide mix of products (Farla et al 1997, p.749), international market (CEPI 2003, p.3) and energy intensity in tandem with the potential to recover both heat and electricity from the waste streams of the production processes (Nilsson et al 1995, p.12). Globally, pulp and paper industry is very concentrated into the hands of few international corporates. Competition is based on both prices and quality, depending on the product.

The Finnish pulp and paper sector is an important industrial sector accounting for some 12% of the value of total industrial production in 2004 (Statistics Finland website). The products have developed from bulk to speciality products since the 1960s (VTT Energy 2001, p.138), and the ownership has concentrated into few corporates (Finnish Forest Industries Federation 2006, p.13). Energy has always been a scarcity factor in Finland as the country's endogenous energy resources are limited to bio fuels and peat in the absence of fossil fuel deposits. Finland hosts a concentration of pulp and paper know-how as the world leading pulp and paper engineering consultancy as well as various equipment producers are based in Finland. In addition, majority of European paper engineers graduate in Finland that provides the sector with well trained labour and research facilities. The efficiency of energy use is very high in world scale comparison. Heat efficiency has improved steadily since the 1960s, however, the intensity of electricity use per tonne of product is increasing as a result of a shift to speciality products which require more complicated production processes, and therefore, are more energy intensive to produce. (Korppoo forthcoming.)

Russian pulp and paper sector was built during the Soviet times when location of the industrial site or its energy consumption was not an issue. Industrial activities were typically concentrated on few regions per industrial sector. Pulp and paper industry was never a strategic industry, and therefore, not a priority to the planning agency. Existing equipment were rather fixed than replaced with new capital stock. As a result, the energy efficiency of the capital stock was very low in the last days of the Soviet Union (Smushkin 2004). After the systemic change, a large share of the equipment was decommissioned as it was not fit to produce anything there was demand for in the competitive market (Korppoo forthcoming). In addition, as demand fell in the newly created market, a lot of the capital stock was operating on less than full capacity (IEA 2002, pp.233-4). As a result, the sector experienced an inefficiency peak in the mid-1990s which normalised towards the end of the decade as production volumes started growing. The main products are bulk products, and some of the products are low quality compared to the world market average (Lesprom 2004, p.6). The main differences between the pulp and paper sectors in Finland and Russia include energy efficiency, ownership structures and product types and quality.

Main drivers and barriers¹

The most important *barriers to modernisation in Karelia and Archangelsk* are the lack of funding including bank credits and non-payment problem with local administrations, low energy price, the lack of enforced property rights, pressure by local administration to finance social programmes, and the lack of government support to general infrastructure in the region.

The most important *drivers to modernisation in Karelia and Archangelsk* are mostly market signal related, including increase of production capacity, reducing cost price, competitiveness, making profit and quality of product. Also fears of bankruptcy fuel modernisation. Energy price was reported as a driver to modernisation by quite a few plants, however, in practice modernisation measures have focused on switching from the

¹ The rest of the article is based on Korppoo (forthcoming) unless otherwise indicated.

market prices fuels, mainly heavy fuel oil, to own or local bio waste. This provides evidence that regulated energy prices, namely electricity and gas, are not high enough yet to spur modernisation while the market priced oil is worth switching to a cheaper fuel. The high share of energy costs of the total production costs was mentioned as a driver as well.

The most important *barriers to modernisation in Finland* are also related to money as the plants report that the investment quotas allocated by corporates are too small². Also the lack of profitable energy saving opportunities due to the high level of energy efficiency is regarded as a barrier to further energy saving, and it was widely argued that capital cycle i.e. investments for other reasons than energy efficiency provide most of the efficiency improvements. Unfinished government policies which may influence the taxation of fuels were mentioned as barriers.

The main *drivers in Finland* include market signal related issues such as increasing production capacity, quality of product and cutting cost prices. Corporate practices to compare plants within the corporate, and to invest in the Best Available Technology (BAT) were regarded as important drivers to modernisation. Government energy saving policies, especially grants for energy saving investments, was recognised as drivers by most plants. Energy price was mentioned as a factor, and a driver, but it was not emphasised as the most important driver.

It is significant *that the main barrier and main driver recognised in both countries is the same: the lack of money and market signals*. However, plants are lacking financial resources for different reasons. In Russia there is no funding due to the poor invest climate and in Finland due to corporate strategies which dictate the allocations of financial resources. The barrier is much more serious in Russia than in Finland.

Main lesson: lack of economic reform blocks other lessons

The unfinished economic reform, and especially, the lack of enforced property rights

² Corporate collects profits and allocates financial resources strategic way.

- a) strongly contribute to the poor investment climate which can be observed as the lack of financing and short-term thinking; and
- b) make it impossible to implement energy policy tools as they require a clear economic framework to support them.

Currently, most investors, both domestic and foreign, are avoiding Russian pulp and paper industry as property rights are not fully enforced, the rules of the game are untransparent to outsiders, and the rule of law is yet to penetrate the regional administrative practices.

Economic reform would introduce hard budget constraints by forcing the unviable companies out of the market as a result of the enforcement of bankruptcy legislation. Economic reform would also improve the availability of investment loans as unviable companies would go bankrupt rather than to the next bank when they run into financial difficulties, and longer-term thinking, including investment planning, would become possible in a stable business environment. In Karelia, ownership structures have not improved much even though most plants have been declared bankrupt in the 1990s.

Lesson: The lack of completed economic reform is a macro-barrier to modernisation, and *it must be solved before focusing on detailed policies*. In the absence of economic reform most of the other lessons do not apply.

Additional problems caused by arbitrary administrative practices

In both countries the plants expected general support from the authorities to the sector. Russian plants felt that the federal government was not providing enough support to building forests roads, while the Finnish authorities were praised for the permission to build fifth nuclear reactor as it contributes to the energy security of the country.

In practice, regional authorities require some of the Russian companies to fulfil social responsibilities as they used to do in the Soviet Union by contributing financially to social schemes. Some of the plant managers argue that it is necessary to keep the authorities satisfied in order to avoid difficulties. This enforcement of unlawful tax schemes is based on the threat of difficulties the regional administration could cause,

such as revising an informal agreement between the administration and the plant how to adjust the implementation of environmental legislation which is too strict to be implemented as such, arranging tax or other inspections or withdrawing support to international funding applications. No empirical evidence of such things happening to any of the plants included was identified, but the interview evidence suggests plant managers fear this could happen should they refuse to contribute as requested. At the same time, local authorities fail to pay for the heat the plants deliver which can be regarded as a kind of governmental fee in practice as the plants have little chance to change the situation.

Administrative reform in the regional level is another requirement for large scale modernisation of Russian pulp and paper industry. Currently, the arbitrary conduct by regional administrations makes the future unpredictable for businesses, and therefore, too risky to invest in modernisation. The way Finnish and Russian plants see their *relation with the authorities*³ is dramatically different. In Russia, implementing legislation is negotiable while in Finland the rule of law is non-negotiable and based on the ruling of courts.

Figure 1 shows which parts of the administrative practices would benefit from a reform in order to provide a functional framework for implementing policies. First, regional policies should be planned based on long-term strategies and policies should be coordinated by studying the potential impact of new policies in the existing framework. Involving stakeholders by consultations and in the implementation of policies improves the chances of success of policies. Second, implementation of policies requires division of responsibilities and accountabilities between public agencies. Setting targets is important in order to review the work that reflects the success of implementation. For now, policies have been based on the division of responsibilities between agencies in the case regions, however, no serious targets have been set and the outcomes of policies have not been reviewed. In general, implementing policies has not been taken seriously by public officials. Consequently, the third important reform needed is dealing with this misconduct of officials. The legally set roles of regional officials must be enforced,

³ In the Russian cases mostly regional authorities, and in the case of Finland with national level authorities.

stakeholders encouraged reporting misconducts, and officials punished when they fail to follow the code of conduct established by law.



Figure 1 Focus of administrative reform required

Lesson: The Russian authorities are arbitrary, and companies have fewer tools to fight for their rights as authorities can arrange difficulties for them. Implementation of laws can be ‘negotiated’. Introducing administrative reforms to create a neutral governance system similar to that in Finland basing activities in law in transparent manner would support confidence in the business environment by contributing to its predictability.

Corporate ownership introduces strategic thinking

The main difference between the countries is the *ownership arrangement* of the plants which is reflected throughout all the drivers and barriers. In Finland, corporate structure has penetrated through pulp and paper sector. All the Finnish plants included into this study are owned by a corporation. In Russia, independent ownership structures dominate while corporate structure is only emerging (see Table 10.8). Martinot (1995,

p.124) reports how the high degree of control of the company by labour causes significant resistance to economic efficiency measures such as reducing the workforce. It seems that in Karelia, bankruptcy has been used as a tool to restart the same business again in some cases.

Plant	Ownership	Strategic planning	Role of energy experts	Modernisation*
1 KAR	20% foreign	Not obvious	Unclear	Average
2 KAR	Insider	Some signs as specialising	No	Low
3 KAR	77% foreign but controlled by insiders	Not obvious	Unclear	Low
4 KAR	Outsider Russian holding company	Yes	Established	Average
5 ARC	50% Russian companies, 30% insiders	Not obvious, even though strategy mentioned but inertia in decision-making	Established	Low
6 ARC	Mainly owned by foreign company	Some signs	Established	Average
7 ARC	26% Russian corporation, 25% Russian bank, insiders	Yes, competition between units of corporate	Established	High

Table 1 Ownership structures of Russian plants compared to some indicators

*Key to levels of 'modernisation': Low – below 20%; Average – 20-50%; High – over 50%.

Corporate structure means that a single unit has much less decision-making power than independent plants do, but the investment potential of a corporate is much larger than that of an independent unit. Corporate strategy acts as a guideline to investments in Finland, where the competition of funding between the units of a corporation is a factor of daily life. Even though some Finnish plant managers argue that the basic investment allocation by the corporation is too small for their needs, they also recognise that if the unit wins the funding competition inside the corporation, funding large investments is easier than it would be for an independent unit.

Based on the scrutiny and strategic planning of a corporate structure, investments are allocated to the most cost-effective and strategically favourable proposals. In Russia, investment related decision-making tends to be less structured and planned than in Finland. The time span of investment-related decision-making is considerably shorter, and the uncertainty of the future in general and property rights specifically make investments with longer payback period unattractive or even impossible. Also inertia in decision-making was observed in some cases. More investment planning was reported by corporate-owned plants that suggests that insider and mixed ownership patterns promote investment planning less than corporate ownership. Table 1 illustrates that modernisation has been more active by plants owned by outsiders.

The role of energy experts is a good example of the differences between the governance systems. Energy experts have an established role in investment related decision-making in Finland, but less so in Russia. However, Russian plants with elements of corporate strategy had more often established the role of energy experts in decision-making than those which had no corporate strategies (see Table 1).

Lesson: Corporate ownership supports modernisation because corporate strategy guides investments contributing to the coordination of the modernisation process. Competition between units delivers the most cost-effective investment decisions, and corporates can afford larger investments than independent units. However, corporate investors currently avoid Russia due to the unfavourable investment climate which could be improved by finalising economic reforms.

Higher energy price makes energy worth saving

Energy price was regarded rather as a factor than a driver to energy saving in Finland while Russian views were less clear. Finnish corporates provide their units with electricity and heat below market prices as does the Russian government by subsidising energy prices which might both act as a barrier to energy saving in theory. However, prices are significantly higher in Finland than in Russia as shown in Table 2. Even though

the Finnish corporates provide plants with below market energy prices in Finland, energy use still remains more efficient than in Russia.

	Unit EUR/	Karelia	Archangelsk	Finland
Electricity	MWh	21.68	36.29	71
Heavy fuel oil	t	71.04	84.25	265.8
Gas	1,000 m ³	26.94	24.81	193.0
Coal	t	22.63	21.4	106.7
Petrol	t	302.87	287.36	1292.5

Table 2 Comparison of industrial electricity and fuel prices between Karelia, Archangelsk and Finland in 2003

Sources: Karekomstat 2004, pp.126-7; Archangelskii oblkostat 2004, p.94; Teollisuuden ja Työntäjien Keskusliitto 2004; Adato Energia 2003 p. 39.

Russian experts claim that the current energy prices are high enough to stimulate energy saving. Even though energy efficiency has slightly improved since 1991, no major modernisation waves can be observed in the technology paths apart from some exceptions. This suggests that the improvement of energy efficiency is more likely to have been caused by the wave of decommissioning obsolete equipment in the early 1990s. As a comparison, the high level of energy efficiency in Finland provides evidence that prices are high enough to stimulate energy saving. Consequently, it can be concluded that the Russian prices are not high enough so far. The views of the Russian energy experts may be based on social rather than economic grounds.

But growing energy prices will not make much difference in Russia if companies are operating under soft budget constraints i.e. not accountable for all their spending as outstanding debts are not routinely challenged, and debts to authorities can be deleted by an administrative action. Economic accountability is a framework required for energy pricing instrument to deliver energy savings. The trend to switch to cheaper fuels was observed both in Finland and in Russia which would suggest that the market mechanism works, and that budget constraints are either hard or moving to that direction in Russia. The share of energy costs of the total production costs is dramatically higher in Russia than in Finland, and in Russia many low hanging fruits of energy saving are still available.

Lesson: Energy price is high enough in Finland to stimulate energy saving, but in Russia no significant changes have been detected which suggests that energy prices remain too low to trigger energy saving. The Russian potential of energy saving is so large that increasing energy prices should make energy saving attractive easily as long as budget constraints are hard. The experience of fuel switching triggered by price differences of fuels would suggest that economic reforms have moved far enough to make price increases encourage energy saving, and therefore, market based energy prices could work even in the absence of further economic reforms.

Government support is needed

Lack of funding seems more acute in the case of Russian plants than the Finnish plants. All Finnish plants have their annual funding allocation from the corporate, and the potential to receive more funding for the best proposals, while there is a constant shortage of money in most cases of the Russian plants as profit is not enough to cover investment needs. The basic difference of backgrounds is significant. The task of the Finnish plants is to keep their fairly up-to-date and well maintained equipment functioning as efficiently as possible with a limited but annual funding allocation, and without direct link to the sales of products. Most Russian plants are trying to update their mostly old and out-of-date equipment with only very limited funding earned by running the mentioned equipment, and therefore, very dependent on the profit made. For the Finns it is possible to plan investments as the equipment is mostly running fairly smoothly while when Russian equipment fail, and in many cases there is money to fix only the most acute failures.

High interest rates and unavailability of investment loans are results of the risks investors experience, and the short-term approach of the Russian economy is a reaction to the ongoing change in the economy. The attitude of banks makes sense; why lend money over long periods of time and let borrowers delay beginning repayments when property rights and political developments on the highest level remain uncertain. The stability of the Finnish system provides a more reliable basis for banking business, and consequently, similar problems do not occur in Finland.

Modernisation of the pulp and paper sector is, indeed, a significant task, and the sector needs financial support from the state if a large-scale modernisation is desirable for the government within the next decade. Grants and tax breaks could, therefore, encourage the private sector to act faster. Whether the government should provide direct financial support to industrial sectors is a wider discussion, and one may argue that this should not happen in a market economy. But the scale of modernisation need is very significant, and as the pace of modernisation has been very slow during the first 15 years of transition, the production infrastructure may physically collapse before the investment climate improves enough to attract investments to modernisation. Focused grants distributed through a bidding process⁴, and tax breaks against desirable performance by industrial actors⁵ have been applied in market economies, and would be unlikely to cause damage to the emerging market economy.

Lesson: Finnish and Russian plants are in different positions as Russian plants need more modernisation more urgently. As resources to modernise are limited, not all required modernisation can be implemented. Russian economy remains an unstable business environment, and therefore, fails to attract investments. As a result, in the absence of further economic reform, the only way to provide enough financial resources for a wide scale modernisation of the pulp and paper sector within the 2000s is to provide government support.

Interdependence of reforms and policies: energy saving as an example

The performance of *energy saving policies and measures* were regarded as positive in Finland and mostly negative in Russia. This difference of approaches can be explained by the fact that the Finnish set of policies and measures has been a success and plants have participated actively in implementation while the Russian regional energy

⁴ The Finnish government distributes grants for energy saving investments.

⁵ Hennie et al (1998, p.72). Denmark has introduced tax breaks to different types of energy use, and to companies which join a voluntary scheme. According to IEA (2003, pp.51-52), Japan has implemented policies to provide tax breaks to companies implementing desirable energy saving measures.

saving legislations have spun off only few measures or positive results and none of them in the pulp and paper sector. Finnish experts argue that their systematic approach to potential energy saving opportunities makes investing easier, and that the Finnish approach to keep one's word even under a voluntary agreement supports the success of the chosen policy tools.

Both the Russian regions had similar problems with energy saving policies and measures, namely the lack of implementation, the lack of funding, and the lack of clarity how the declared policies should be implemented. This was partly due to the lack of central coordination of implementation as regional energy saving legislations are based on the federal energy saving legislation, and partly due to the lack of attention by the regional administration.

The Finnish successful energy saving policies consisted of two main elements, voluntary agreements by the government with stakeholders to audit energy use, identify energy saving opportunities, implement some of them, and report back to the government body annually, and government grants to support both energy audits and implementation of the identified energy saving measures. There are also national and EU level energy efficiency standards and norms which provide benchmarks for the plant level activities, and the price of energy is fairly high due to market-based pricing and taxes which makes energy saving profitable. The plant level activities are under a constant review due to the annual reporting which adds to the urgency of implementing this voluntary activity, and the national level targets and activities are reviewed both by the administration itself, and by an outside consultant.

Strategic planning of policies as packages together with their implementation coordinated way is crucial. Both the Russian regions had in principle outlined some good policy tools, but they remained unlinked and there were too many of them. A policy package must have clear goals, and each policy tool needs to have a well-defined role which contributes to the overall goal of the policy package. Each tool needs an implementation plan, and a responsible agency. New policy tools must also be coordinated with the existing framework of policies in order to include only measures which are functional in the general legislative framework.

Choice of policy tools must be based on the possibility of their implementation, and the expected outcome. Targets should be expressed in numeric terms that are strictly enforced or otherwise rewarded in the case of good performers. It is awkward to launch a policy which has no fixed target as was done in the case of both regional energy saving policies. General targets are inadequate as it is impossible to evaluate the success of the implementation of the policies against general targets, such as 'higher level of energy efficiency'.

The financial aspect of a planned policy is crucial. The current regional policies have suffered from the lack of funding as part of the planned financing was supposed to come from the private sector, and there has been hardly any public money available for implementation.

In addition, constant evaluation of the outcomes of the implementation is a key to success. Stakeholders must be engaged in implementing the measures and this activity has to be supported both financially and by providing an easy and structured way for the stakeholders to implement the measures. However, given the Russian attitudes and the prevailing lack of responsibility, voluntary approaches like the Finnish may not work and may have to be legislated in order to stand a better chance of enforcement.

Also a better structured federal basis for energy saving policies and measures, or breaking the link between the federal and regional policies altogether by allocating the task completely to the regions, would improve the chances of success of the regional policies.

Increasing energy price is crucial. The current low level of energy prices does not stimulate modernisation, and any energy saving policies are bound to fail if the price level remains the same. Without the financial driver of achieving savings from energy costs, it must be accepted that the level of efficiency is not going to change significantly.

Energy saving policy tools cannot work independently, and therefore, they have to be set up as a systematically structured package to support each other, including well planned policy tools, functional system of implementation and monitoring the outcomes of the policies, and adequate funding. But the success of an energy saving policy package depends even more on the level of energy price and the state of the economy which creates the rules of the game as a framework for business activities. Figure 2 illustrates

this *dependency of energy saving policies of the wider framework* by presenting both general *economic reform* and *energy price policy* as a background of energy saving policies and measures.

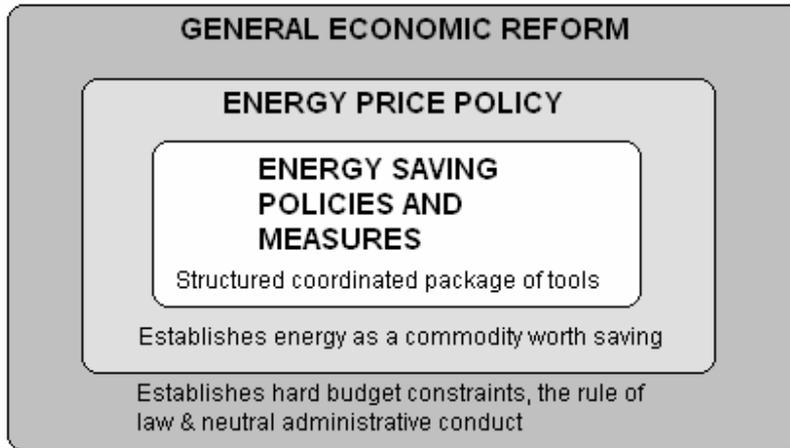


Figure 2 Framework of successful energy saving policies and measures

Without hard budget constraints, certainty of ownership rights, neutral and effective administrative conduct and energy price on a level which makes energy worth saving, it is impossible to implement a successful energy saving policy package.

Lesson: Finnish energy saving policies and measures are well planned, clear and supportive to each other. They also include economic incentives, and are supported by the energy price which is high enough to make energy saving profitable. Revision of Russian energy saving policy along these lines would contribute to their effectiveness, however, also economic and administrative reforms are required to ensure the implementation of specific energy saving policies.

Conclusion

This paper has examined the drivers and barriers to the modernisation of the Russian pulp and paper industry drawing lessons from the more energy efficient Finland.

Based on the interviews with 13 plants, the main driver and barrier to modernisation were found to be the same in both of the countries, market signals and the lack of financial resources, however, the latter was caused by different reasons.

The drivers and barriers found suggest that there are various lessons from Finland to Russia, but their application to Russia is dependent of solving the macro-barrier, the lack of economic and administrative reform, which still prevails in the country. The only major lesson that would apply at some extent before the macro-barrier is solved would be higher energy price as there is evidence that differences in fuel prices already spur action in Russia.

The lessons that could be applied after finalising the economic and administrative reform include promoting corporate ownership which tends to involve practices that support modernisation, and introducing a well-planned and coordinated package of energy saving policies including grants and tax breaks to reward well-performing actors.

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The pulp and paper industry comprises companies that use wood as raw material and produce pulp, paper, paperboard and other cellulose-based products. The pulp is fed to a paper machine where it is formed as a paper web and the water is removed from it by pressing and drying. Pressing the sheet removes the water by force. Once the water is forced from the sheet, a special kind of felt, which is not to be confused with the traditional one, is used to collect the water. Whereas, when making paper by hand... The pulp and paper industry plays a key role in the development of the forestry sector of Russia's economy. Russia has the world's largest forest area (46% of its total land area) and timber reserves (83 billion cubic meters). Meanwhile, it ranks eighth in the world for the production of pulp and 14th for production of paper and cardboard, and the share of the timber industry in Russia's GDP is only 1.6%. The Russian government is currently considering five potential investment projects—pulp and paper plants with a total capacity of 4.5 million tons. The necessary investments amount to approximately \$9.1 billion. These projects were announced by major market players in various regions of the country, taking into account the availability of forest resources. This chapter explores the evolution of the pulp and paper industry in Russia. The evolution is divided into three main periods: the era of the Russian Empire, the Soviet era and the era of transition... Malkov Y, Malkov S (2004a) On the development of Russian pulp and paper industry. Part 1. Paperijapuu — Pap Timber 86:155—159 Google Scholar. Malkov Y, Malkov S (2004b) On the development of Russian pulp and paper industry. Part 2. Paperijapuu — Pap Timber 86:237 Google Scholar. Meidinger E, Brukas V, Bouttoud G, Tysiachniouk M (1999) Forest certification in Eastern Europe and Russia. Globally, pulp and paper industry is very concentrated into the hands of few international corporates. Competition is based on both prices and quality, depending on the product. The Finnish pulp and paper sector is an important industrial sector accounting for some 12% of the value of total industrial production in 2004 (Statistics Finland website). The products have developed from bulk to speciality products since the 1960s (VTT Energy 2001, p.138), and the ownership has concentrated into few corporates (Finnish Forest Industries Federation 2006, p.13). Lesson: Finnish and Russian plants are in different positions as Russian plants need more modernisation more urgently. As resources to modernise are limited, not all required modernisation can be implemented. Karelia Pulp LLC, one of Russia's leading pulp and paper producers, is ready to start modernization of the Kondopoga PPM, a flagship production asset of the company, according to recent statements, made by the General Director of Karelia Pulp LLC Yuri Aivazov. As he said in an interview with Karelia-based Stolitsa na Onego business paper, that also involves the conduction of a large-scale diversification of production at the plant. Yuri Aivazov comments— Finnulp Oy, which is planning a bioproduct mill project in Kuopio, Finland, has submitted an Sponsored. Stop flooding your dryer section — Monitor steam dryness. Russian pulp and paper producers have achieved serious progress in the field of reduction of Sun Paper started up PM 39 successfully ahead of schedule.