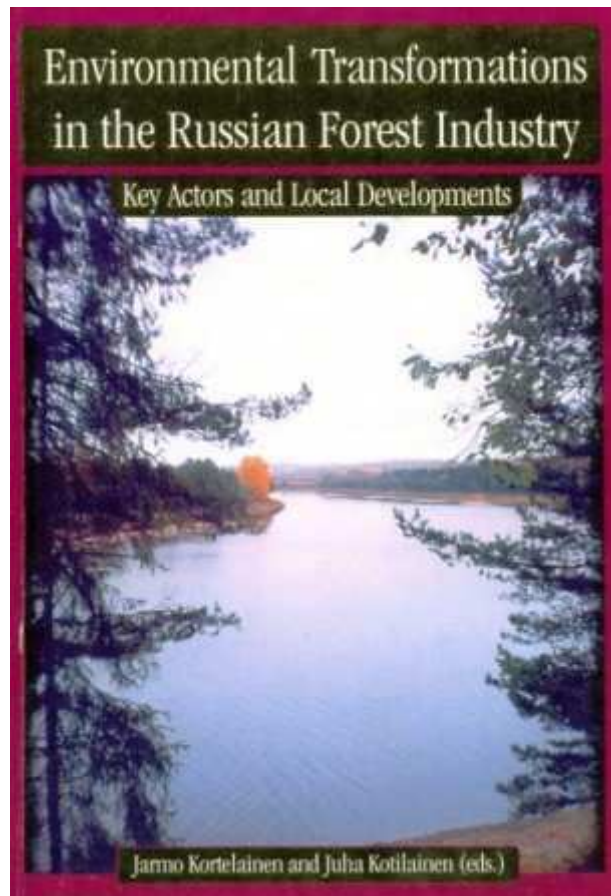


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## **5.1. Local Case Study I: Sokolskiy Pulp and Paper Mill [i]**

**Antonina Kuliasova and Ivan Kuliasov**

### **Introduction**

As the largest forest industry enterprise in the Vologda Region, the Sokolskiy pulp and paper mill is of utmost importance not only for the economy of the town of Sokol, but also for the whole region. In this chapter we will, first, briefly highlight the early history of the Sokolskiy pulp and paper mill and the town of Sokol. Secondly, we will analyse the local socio-economic and ecological situation during the economic reforms since 1991. Thirdly, we will remark on the potential for environmental improvements at the Sokolskiy pulp and paper mill and, finally, point out the most important potential actors in the environmental sphere at the local scale in Sokol.

The history of pulp and paper production in Sokol dates back to the late 19<sup>th</sup> century. Forest industrialist and timber merchant A.Y. Surkov, together with several other owners, established an enterprise called the "Northern Company of Pulp and Writing Paper Production Sokol" in 1896. The company's headquarters were located in Archangelsk. The construction of the mill started on the bank of the River Sukhona in 1897 under the guidance of Belgian experts. Good transport connections influenced the location decision: the road between Moscow, Vologda and Archangelsk ran nearby, as well as railroads from Vologda to Yaroslavl and Archangelsk. The first paper machine was inaugurated in 1899 and the second one in 1903. There was no town called Sokol at that time and the first workers came from the 17 villages surrounding the mill.

The mill gradually grew and there were 1,030 workers in 1912. Very early in the century hostels, workers' barracks, offices, and houses for the engineers were built around the mill. Businessmen from St. Petersburg began to construct a second pulp mill, the Pechatkinskiy pulp mill (today the Sukhonskiy pulp and paper mill) in 1911. Together the two settlements around the Pechatkinskiy and Sokolskiy mills formed the town of Sokol. It did not, however, receive the official status of the administrative, cultural and industrial centre of the Sokolskiy district until 1932 (Loshchilov 1999, 27-53). The importance of the mills to the town increased in the 1930s. A thermal power station was built close to the Sokolskiy pulp and paper mill in 1930 and it even provided electric power for the city of Vologda. In those days the Sokolskiy mill was one of the most important forest industry plants in the entire Soviet Union, and its production volume was second among Soviet paper mills in 1936. (Loshchilov 1999, 54-63.)

The next big change in the company structure occurred in 1976, when the Sokolskiy and Sukhonsky mills were joined together as one combine. In their mutual division of labour, the Sokolskiy mill specialised in producing different sorts of unbleached paper, fibreboard, and technical spirit. The Sukhonsky mill specialised mainly in bleached paper and fibreboard. In the early 1980s the annual production of the two mills totaled 132,000 tons of paper and 171,700 tons of pulp. During the post-Soviet privatisation process the Sokolskiy and Sukhonsky enterprises again became independent companies. As illustrated in chapter 3, the whole forest industry sector in Russia was in crisis at that time. This situation caused trouble in Sokol as well, and the combined production volumes of the two mills were reduced by 8-10 thousand tons per year during the 1990s (Krasniy Sever 1999.)

### **The Modernisation of the Sokolskiy Mill During 1950-1990**

The modernisation process of the Sokolskiy pulp and paper mill during 1950-1980 has been highlighted in detail in the regional and district newspapers, and recently, too, on the internet home pages of the regional administration and the mill. The modernisation of several sectors of production, replacement of outdated equipment, and establishment of new workshops took place with the purpose of increasing production capacity and improving the quality of products. Next, we will point out changes which were important from the environmental point of view, and especially focus on technological changes that deal with environmental protection. In the following we will consider modernisation only in the sense of updating technology, and ignore the other spheres of the concept that are discussed elsewhere in this volume.

During the Soviet era most of the investments at the Sokolskiy mill did not have any direct connection with environmental protection. For example, a production line for isolation fibreboard was constructed in 1953, and production of fodder yeast based on pulp production waste was started in 1954. Between 1973 and 1984 pulp digesters number 11 and 12 were built and a fundamental reconstruction of the thermal power station was carried out. The construction of the new pulp bleaching system has been one of the major projects at the Sokolskiy mill since the 1980s. It has recently been estimated that this project will be completed in 2002 (Sokolskiy TSBK 2001).

However, there were also improvements that can be seen as environmental investments. The first was carried out in the 1970s when the Sokolskiy mill built a waste water treatment plant. The plant was not constructed for the pulp and paper mill alone, but it served other enterprises and households in the town as well. The water treatment plant was constructed according to the governmental decree of the Ministry of Pulp and Paper Industry.

This decree was issued specially for this particular pulp and paper combine. Thus, there was an attempt to solve the problem of waste waters in Sokol at the highest level of the Soviet Union. The workers of Sokolskiy and Sukhonsky mills participated in the construction of the purification plant. The construction was fast and carried out in very difficult conditions on marshy grounds. The last part of the purification plant began operating in 1980 (Loshchilov 1999, 113-116).

The purification plant has had a great influence on the Sokolskiy mill and development of the town of Sokol during the last twenty years. It has also improved the ecology of the River Sukhona, which belongs to the White Sea watershed, and is the largest river in the Vologda Region. Before the construction of the purification plant local systems with cesspools and septic tanks were used and a large amount of waste water was not cleaned in Sokol at all. The drains from the Sokolskiy mill went into the River Sukhona and the sewage from the Sukhonsky mill was released into the River Pel'shma, which flows into the Sukhona in the downstream from Sokol. The absence of any purification plant, water cleaning station and sewer system constrained house building in certain areas and the development of the town. During the 1950s the level of infectious diseases connected with water was the highest in Sokol of all districts in the Vologda Region (Loshchilov 1999).

The second environmental investment also dealt with water purification: in 1990 an inbuilt waste water cleaning system was inaugurated at the Sokolskiy mill. Initially, this system allowed the return of up to 35 percent of fibre waste into the production process. The fibre was reused as raw material for 720 thousand square meters of soft wood fibreboard in 1990. Thereafter the process has become even more efficient and about 90 percent of fibre waste returns to the production process. This system has reduced the consumption of fresh water at the mill.

The third environmental improvement concerns the local thermal power station. As has been the rule for single-industry towns in the Soviet Union and Russia, the Sokolskiy mill has seen to the operation and development of municipal services as well. The integrated combine built, for example, a large part of the blocks of flats in the town, as well as welfare and sports facilities, and it also actively participated in constructing infrastructure for the town.

The district heating system was and is one of the most important public services provided by the mill. The power station was originally built in the 1930s, and renovated in 1978, which allowed it to provide heating and hot water to the inhabitants of the town centre. The integrated Sokolskiy and Sukhonsky combine has since provided heating for the majority of houses in the town.

Thus, we see that in the Soviet era there were attempts to solve problems related to the local environmental conditions in Sokol. From a certain perspective these could be categorised as early attempts toward ecological modernisation. In the 1970s there was a more general tendency in Soviet industry to build water purification systems in industrial localities. This was a reflection of a new social and environmental protection policy of the Soviet state in the 1970s (see Ziegler 1987, 45-77).

This modernisation was connected to a new discourse about environment and social health in Soviet state institutions (see Kelley et al. 1976).

These technological improvements and attempts to make environmental investments were very significant for improving environmental conditions in industrial localities. However, as in many other cases, these attempts were not sufficient to clean the surroundings of the industrial plant in Sokol. Today, the purification system is only partially operative, and it cannot ensure the cleaning of the polluted sewage waters. The ecology of the Rivers Pel'shma and Sukhona has greatly suffered from this problem.

### **Restructuring of the Sokolskiy Mill During the Socio-Economic Reforms of the 1990s**

We will now briefly describe the socio-economic situation in Russia during the last decade, in order to place the case of Sokol into a broader context. During the 1990s the socio-economic reforms had a radical influence on the Russian economy and population. Production volumes declined until 1998, and thereafter the economy began to grow.

Table 2 indicates that the amount of enterprises in the Russian wood manufacturing sector increased from 1992 to 1999, but during the same time period the number of employees in this sector declined. This illustrates that while numerous new small and medium-sized enterprises have appeared, large enterprises, which existed as a heritage of the Soviet period, have discharged a great deal of their former employees.

The removal of timber from forests was also reduced during this period. At the same time, the spatial distribution of wood cutting has changed and moved to the European North in Russia. The production of fibreboard, as well as pulp and paper, has also declined. In 1996-1998 the woodworking and pulp and paper industries had budget deficits and suffered from material losses. Only since 1999 have these industries been profitable (Goskomstat Rossii 2000c).

**Table 2. Woodworking and pulp and paper industries in Russia in 1992 and 1999** (Source: Goskomstat Rossii 2000c).

|                                       | 1992  | 1999   |
|---------------------------------------|-------|--------|
| Number of enterprises                 | 8,200 | 21,800 |
| Number of employees (1.000 persons)   | 1,813 | 1,040  |
| Purchased timber (million m3)         | 238   | 83     |
| Production of fibreboard (million m2) | 427   | 244    |
| Pulp and paper production (1000 tons) | 5,676 | 4,196  |
| Paper production (1000 tons)          | 3,608 | 2,941  |

The forest industry combine in Sokol, which included the Sokolskiy and Sukhonsky mills, was disbanded in 1993, when both mills became independent open joint-stock companies. The political and economic crisis in the country affected the operation of the Sokolskiy mill and the main construction projects were interrupted in 1996 because of a lack of funding for investments. Therefore the construction of the bleached sulphite pulp workshop remained unfinished. Completing the project at that time, would have required financial investments of about 45 million US dollars. Moreover, there was low demand for the assortment of papers produced by the mill both in the foreign and domestic markets, because consumers' demand for products manufactured by more advanced technologies was growing.

The mill also had problems in getting enough raw material because the centrally created ties between the raw material suppliers and mills had disappeared. Thus the Sokolskiy mill did not avoid the shocks caused by short-sighted reforms in Russia and there was a sharp cutback in production. 1996 was the most difficult year in Sokol, as it was for the whole woodworking and pulp and paper sector in Russia. The causes of the sharp decrease in production hence came from two directions: reforms of the socio-economic system, on the one hand, with privatisation as a key feature; and markets and changing consumer preferences, on the other.

The socio-economic situation at the mill has improved since 1998. This was partly influenced by the efforts of the regional government, because the Forest Complex Department of the Vologda Region strove to increase and strengthen business contacts between the Sokolskiy mill and logging companies. The Department successfully negotiated with companies such as Vashinskiy lespromkhoz, Tot'males, Abstrofor and Kipelovo, which started to supply the Sokolskiy mill with roundwood (Vologda.ru 2001).

An important new actor appeared in Sokol in 1998, when the Sokolskiy mill became part of the Fox Group (Gruppa Foks). The headquarters of this investment group is in Moscow. The strategy of the Fox Group is to link sev-

eral forest industry enterprises with each other in order to create vertically integrated production chains. As the Sokolskiy mill became part of the Fox Group, many problems connected with raw materials and product distribution were solved. The Fox Group united various enterprises from logging and woodworking companies to pulp and paper mills and marketing firms.

For example, one of the members of the association, TulaBumProm, produces a wide assortment of paper products ranging from wallpaper to notebooks. As part of the Fox Group, the Sokolskiy mill has become the main purveyor of paper to TulaBumProm (Fox Group 2002). In a way, the ties between companies that had existed in the Soviet era were re-established in a new form by both regional authorities and the investment group. However, the Fox Group has caused anxiety among residents in Sokol. The representatives of this firm were first regarded as "strangers" from the Moscow business and people thought that the investors had purchased the enterprise in order to make an immediate profit. People were afraid that the Fox Group would exploit the mill and in the end leave the town. The managers of the mill and the Fox Group made substantial efforts, including activities at the mill and work with the mass media, in order to change this opinion. The alarm has gradually calmed after the Fox Group launched a programme for improving the technological level of production at the Sokolskiy mill.

This programme pays special attention to the quality maintenance of products requiring international standards. It also seeks to reduce the costs of roundwood and other materials as well as energy resources. The programme also included a plan to expand the range of products in order to increase demand in the domestic and foreign markets. The investment programme also included improvements in ecological protection at the mill and in the town. The main part of this ecological programme is connected with the reconstruction of the purification plant. In addition, a project for chlorine-free pulp bleaching was launched. Due to the obtained investments, paper machines 4, 5, 6 and 11 were rebuilt in 1998-1999. These were the oldest machines at the mill and, for instance, machine no. 5 had been operating since 1905 with only minor reconstructions. In addition, during 1998-1999, new equipment and chemical components for improving the quality of paper were purchased and the reconstruction of machine no. 9 began. In comparison with 1997, in 1998 the specialisation of production and orientation towards new technology in production increased (Sokolskaya Pravda 1998).

The investment programme and cooperation with the other enterprises of the Fox Group has enabled the mill to operate stably. In 1998 the volume of paper production increased by ten percent from previous year and the mill produced 36,000 tons of paper. In the first quarter of 1999 paper production

growth was 50 percent. In 2000, production grew by 42.8 percent in comparison with 1999, and in 2001 production continued to increase (Sukhonskya Pravda 2001). Today, the Sokolskiy mill produces 25 kinds of paper, soft and rigid fibreboard, a broad range of consumer goods, spirits and nutrient yeast. The mill exports fibreboard to the USA, the Netherlands, Great Britain, Finland and several other countries; paper to Mongolia, Pakistan, Iran, and France; and pulp to Italy, Germany and Austria. (Sokolskiy TSBK 2001).

The Fox Group has planned to initiate further investments at the mill between 2000 and 2002 in order to carry out full technical reconstruction of paper production. The first phase of this project includes completing the modernisation of old equipment and improvement of paper machine no. 10. The aim of the second phase is to start production of pulp bleached without chlorine, which would be unique in Russia. In addition, the pulping capacity will increase from 100,000 tons to 120,000 tons of pulp per year. It has been estimated that the realisation of all the plans would allow not only an increase in the value of output to 800-1,000 million rubles per year, but also to improve the quality of products and expand the range of goods.

### **Sokolskiy Mill and the Local Socio-Economic Conditions**

Let us first briefly comment on the employment situation in Russia and the Vologda Region. The number of employees declined in Russia from the beginning of Perestroika to the end of the 1990s (Table 3). The situation in the Vologda Region reflects the overall situation in Russia. Unemployment increased in Russia and in the Vologda Region (Table 4.). The average rate of unemployment in 1998 was 13.3 percent higher in Russia and 12.7 percent higher in the Vologda Region than in 1997. 1998 saw the highest unemployment rate since 1992 (Goskomstat Rossii 1999a). The figures in Table 4 represent "real unemployment" (not the number of registered unemployed) estimated by the State Committee for Statistics.

**Table 3. Employment in 1985 and 1998** (source: Goskomstat Rossii 1999a)

| Region         | 1985 (number of persons) | 1998(number of persons) |
|----------------|--------------------------|-------------------------|
| Russia         | 74,936,400               | 63,642,000              |
| Vologda Region | 703,200                  | 571,900                 |

**Table 4. Unemployment in 1992 and 1998** (source: Goskomstat Rossii 1999a)

| Region         | 1992 (number of persons) | 1998 (number of persons) |
|----------------|--------------------------|--------------------------|
| Russia         | 3,877,100                | 8,876,200                |
| Vologda Region | 20,700                   | 79,400                   |



As previously mentioned, the Sokolskiy mill largely determines life and social conditions in the town of Sokol. During the Soviet era unemployment was an unknown phenomenon and the first official unemployed people appeared in Sokol in 1991. Annually between 1992 and 1996 from 300 to 600 persons lost their jobs in the town. In 1996, during the worst recession at the Sokolskiy mill, over 1,000 people were fired. During the first half of the 1990s most of the unemployed were women and young people. Since 1995, most of the unemployed have been men. The number of unemployed people with higher education has also increased. The most difficult year for the town from the point of view of unemployment was 1998, when there were 109 unemployed persons for each vacant job.

This reflected the situation in Russia and in the Vologda Region, but the problem in the town was even more difficult. As the situation improved at the Sokolskiy mill and production began to grow, employment also began to improve. In 2001, the number of unemployed declined in Sokol (Sokolskiy gorodskiy otdel statistiki 2001a; 2001b). Today, the Sokolskiy mill employs almost 3,000 persons. Previously there were delays in paying wages, but recently all the workers have received their wages on time. The average monthly wage at the mill has increased from 1,094 rubles in 1998 to 2,185 rubles in 2000 (Sokolskiy gorodskiy otdel statistiki 2001a; 2001b). The average monthly wage was 1,051 rubles in Russia and 1,187 rubles in the Vologda Region in 2000. Thus, the average wage at the mill was about double that in Russia or in the Vologda Region (Goskomstat Rossii 1999b).

The relations between the mill and the town, however, have not always developed smoothly. The company provides heating for more than half of the houses, but the town administration has not been able to pay the fees. The town's debt has been growing and was about 50 million rubles at its height in 2001. The main gas provider, OAO "Severgasprom", has not made this problem any easier. Frequently the management of the mill has received warnings that the deliveries of gas to the town will be reduced, because the company has not paid the town's debt to "Severgasprom". The mill's managers must then choose what to do, to disconnect heat, for example, from the Timber Industry Technical College, the Pedagogical College or the Police (Militia) Department. Thus, the management of the mill is put in a rather ambiguous position. It is clear that the problems in payments should be decided by more civilised methods. The heads of the Sokolskiy mill have also tried to financially support the social infrastructure of the town: the enterprise supports the House of Culture, two recreation departments, the sports and health centre, sports stadium and two libraries.

## **Causes of Environmental Problems**

The main ecological problems in the town of Sokol are related to the quality of air and water. For example, in the official zone of influence of the Sokolskiy mill, the level of sulphur dioxide in the air is eight times higher than the maximum level allowed by Federal law and norms. One of the neighborhoods located near the Sokolskiy mill was abandoned in 1970, because unfavorable winds brought it toxic compounds. The smell of acid was constantly felt in the town for years, but during the early 1990s the situation improved because of the decline in production. Recently air quality has been getting worse again. Today ecological problems are severe and affect the inhabitants' health. According to an official of the environmental administration there are, for example, increased levels of allergic diseases, diseases of the respiratory tract and cancer among the inhabitants of Sokol.

In addition to the two pulp and paper mills there are many other enterprises located along the River Sukhona, including ceramic handicraft and woodworking enterprises. Other smaller streams in Sokol that flow into the River Sukhona, are also heavily polluted by the solid and liquid effluents of settlements and enterprises. There are three main reasons for this pollution. Firstly, the capacity of the purification system is not sufficient. The purification plant of the town and mill was planned for 29,000 cubic meters of waste water per day, but in practice the effluents are now 35-36,000 cubic meters. Secondly, there are sewers from municipal services that flow directly into the river. And thirdly, accidents are quite usual, and industrial waste also flows directly into the rivers. For example, in 1980 whole tanks of acid drained directly into the river (Sukhonskya Pravda 1999).

In recent years inhabitants of the town have noticed an improvement in the quality of water in the River Sukhona. This improvement has resulted not only from decreasing production, but from the strengthening of ecological and sanitary controls. A few years ago local inhabitants started fishing again near their homes on the riverbank below the mill. According to the fishermen the fish is edible though it has the smell of acid. Earlier, according to the residents, the fish had such a strong taste of acid that it was impossible to eat. In spite of the improvement experienced, the quality of water is still very poor according to local and regional environmental authorities. The effluents into the River Pel'shma contain lignosulphonate and lignin. As a result of chemical reactions between phenol and chlorine dioxin is also present in the water. Due to several accidents at the Sukhonsky mill, acid has also flown into the river. Because of bacterial contamination, the Sanitary Epidemiological Service has forbidden bathing and fishing in the rivers in the town area. Local inhabitants have, however, constantly bathed in these rivers.

Thus, there has sometimes been a rather strong contradiction between the experts findings and residents' behaviour.

It has been estimated that the purification plant in Sokol would demand renovation and investments worth 250 million rubles. The Sokolskiy mill management has prepared a ten-year improvement programme to modernise the purification system. The town administration, however, has required that construction of the new purification plant be transferred to the town budget. Yet, at the same time, the town administration cannot pay the expenses of operating nor maintaining the present waste water treatment system. The town administration, however, pursues its own interests. It believes that if the purification plant were municipal property, it would cover its debts to the Sokolskiy mill and the town would even receive additional income. The town administration also hopes to increase tariffs on waste water treatment, which today are some of the lowest in the Vologda Region. Thus, the town administration aims to make profit and augment the town budget. Local environmental issues are hence effectively intermingled with local economic policies.

The managers of the mill and ecologists from state services have warned about the possibility of an ecological catastrophe if the responsibility for the purification plant is given to the town administration. The managers of the Sokolskiy mill have offered another variant as a compromise. The sewers of the mill and the town would be separated, and responsibility for municipal and household sewage would be transferred to the town. The mill management also insists that purifying the mill's waste waters should remain the company's responsibility - Management's claims have also been supported by representatives of the state nature protection administration and environmental organisations.

As a result of negotiations, responsibility for the purification plant has been given to the Sokolskiy mill for the next six years. The mill administration does not consider this a victory, because six years is too short a period for any substantial reconstruction. The purification plant is in very bad condition at the moment and needs massive reconstruction. Data from the Centre of State Sanitary-Epidemiological Inspectorate shows high bacterial pollution levels in the water after treatment in the purification system (Sokolskiy mezhrayonnyy tsentr gosudarstvennogo sanitarno-epidemiologicheskogo nadzota Vologodskoy oblasti 2001). Thus, the conclusion is that the bacteriological purification system does not function, and only the mechanical purification system is operating. Hence, the system is indeed in need of immediate large-scale renovation.

## **The Potential for Ecological Modernisation in Sokol**

We will conclude this chapter by evaluating the potential for ecological modernisation in Sokol and especially at the Sokolskiy mill. As shown in chapters 2.1 and 2.2, environmental improvements and ecological modernisation within the forest industry have required contributions of various actors, of which the environmental movement, environmental authorities, customers and companies have had key roles. Next, we will discuss the potential role of a few actors in Sokol.

Residents of Sokol have for decades been living in ecological conditions that are harmful to health and have become accustomed to this situation. During the restructuring period the local media has highlighted social problems connected with jobs, wages and housing as the main problems in the town. Today, environmental NGOs are not strong in Sokol. In the early 1990s, which was generally also a time of environmental activism in Russia (Yanitsky 2000), a rise in local environmental activity occurred.

A new hydrolytic factory for producing nutrient yeast was constructed in Sokol in 1991, but it operated for only a few months before being closed. The reason for the closure was its environmental effects, and it was considered to be very dangerous to the environment and health of the inhabitants. From the very beginning the residents had been convinced of its harmfulness and protested against it.

Today, there are no open environmental protest movements in the town. There are, nevertheless, two environmental NGOs (Department of All-Russian Society of Nature Protection and "Saving the Small Rivers and Springs"), and a few grass-roots ecological groups in schools. These NGOs and groups have been engaged in environmental education and thus their activities have not been directed against any enterprises. These groups and organisations have organised actions concerning garbage collection and planting trees and have been working mostly with school children and young people.

In addition, just recently, a new environmental grass-roots group has evolved among inhabitants of villages located along the River Sukhona downstream from the mills. They have been trying to solve the problem of drinking water in their villages, because the river water they use is very polluted. They have been trying to organise a dialogue with authorities in Sokol and Vologda and the mill's management.

Large numbers of inhabitants in Sokol have worked at the Sokolskiy and Sukhonsky mills. This means that they often have very close ties with these enterprises. Workers of the Sokolskiy mill, on the one hand, are pleased about the improvements in the economic situation at the mill, but, on the

other, feel they no longer govern the mill, because Muscovites from the Fox Group control the majority of the firm's shares. The potential for criticism of the company management is greater than it used to be, when the mill was in the hands of its employees.

At the moment it seems that there are some possibilities for improving environmental protection at the mill. Thus, the main actor for ecological modernisation could be the management, which is interested in updating the mill's technology for economic reasons. The Fox Group aims at improving its competitiveness in the Russian and foreign markets.

However, as there have been big investments in the development of production capacities in recent years, attempts to make environmental protection more efficient have still been rather weak. Foreign markets might have some effect on environmental protection, but to analyse the potential influence of foreign markets on the ecological modernisation process in the future, further and deeper research is needed.

On the other hand, the relationship between the Sokolskiy mill and the municipal administration as well as the administration of the Vologda Region have had a big influence on the production of the mill. Thus, the potential and pressure for further investments in environmental technology are also connected with the activities of local and regional environmental agencies. The main potential actor promoting ecological modernisation in this sphere would be the Department of Natural Resources of the Vologda Region. It now handles all nature protection services as a result of the restructuring of state environmental governance (see chapter 4.2 in this volume). However, the Department of Natural Resources has been oriented more towards utilising resources than protecting them.

This position is clearly visible, for instance, in its forest policies, in how it reacts towards forest use, cutting, transportation, manufacturing and trade practices. In this situation, the prospects for ecological modernisation are connected to the improvement of production technologies and the increase in the number of enterprises with international FSC (Forest Stewardship Council) certification.

We would also like to assume that in the conditions described in this chapter, a major role in ecological modernisation could also be played by the increasing activities of environmental NGOs (Sokolskaya Pravda 1998).

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<sup>i</sup> The chapter is based on empirical materials collected between January and August 2001 in Sokol and in the city of Vologda. We analysed articles in the newspapers Krasnyy Sever, Russkiy Sever and Sokolskaya Pravda published between 1998 and 2001; internet pages of the Vologda and Sokol public administration; as well as statistical data from the Statistical Committee's Sokol Department, the Sokol Inter-district Centre of State Sanitary-Epidemiological Inspectorate, and the Committee for Environmental Protection and Natural Resources of the Town of Sokol. Two semi-structured interviews with leaders of environmental NGOs in the city of Vologda and the town of Sokol were carried out as well. The authors would like to thank the Committee of Natural Resources and Environmental Protection in Sokol, and especially Sofiya Shurnilova, for helping in arranging contacts.