Ecoproject Partnership, Belarus
&
Women in Europe for a Common Future (WECF)

Baseline Survey Report

Consolidating the baseline surveys conducted in 17 communities in Belarus for the Matra project:

"Developing multi-stakeholder cooperation in the areas of water, waste and energy efficiency in Belarus"

January 2008

TABLE OF CONTENTS

Abbreviations:

BYR: Belarusian ruble
Cwss: Central water supply system
CIS: Commonwealth of Independent States (former Soviet Union states)
GDI: Gender-related Development Index (of the UNDP Human Development Report)
GDP: Gross Domestic Product
GNI: Gross National Income
MHU: Ministry of Housing and Utilities
NGO: Non-government Organisation
PPP: purchasing power parity
RCGiE: Umbrella organisation of all SES
SES: Sanitary and Epidemiologic Station
WECF: Women in Europe for a Common Future

Ruble – Euro exchange rate as per October 2007:
1 EUR = 3,059 BYR
1 BYR = 0.000326904 EUR

EXECUTIVE SUMMARY

1. This report presents the consolidated findings of 17 baseline surveys conducted in 17 communities in Belarus in the context of the Matra project called: “Developing multi-stakeholder cooperation in the areas of water, waste and energy efficiency in Belarus”, being implemented by Ecoproject Partnership in Belarus and Women in Europe for a Common Future (WECF), based in The Netherlands. The 17 baseline surveys were conducted in the third quarter of 2007 by local NGOs or local initiative groups in 3 villages, one town, one apartment block, one gardening society (dacha complex), 8 schools, 2 clubs and one children’s health centre.

2. The findings demonstrate that in rural areas homestead agriculture for own consumption is common, especially the cultivation of vegetables, potatoes and some fruit trees. Use of manure is widespread (even bought) but synthetic fertilizers are hardly used. Composting is quite common. Use of agro-chemicals is reportedly used mainly against the Colorado Potato Beetle.

3. Almost all (private and public) buildings in the surveys have double glazed windows, however, the state of the window frames is often unsatisfactory (many chinks). Especially schools have problems to maintain a reasonable temperature in the building during (cold) winter days. Institutions and households are concerned about the rising energy prices and several baseline surveys reported an interest in energy (electricity) saving. Gas is used for heating where there is gasification; still firewood is additionally used to reduce the cost of heating. If no gasification, households use only firewood, which they buy.

4. Respondents of most of the schools and clubs reported on insufficient light in the classrooms caused the bad state of the lamps. Schools informed not to have budget to replace them.

5. The schools, the apartment block and part of the rural households are connected to a central water supply system, either supply surface water (e.g. in Minsk) or water from bore wells. Almost all water users pay a water fee based on the assumed consumption per household member or pupil - not (yet) based on the actual consumption as measured by water meters. The majority of the communities are not satisfied with the water quality, in particular there were complaints on the too high iron contents, turbidity and/or the hardness of the water. Part of the rural population use water from shallow wells. They have few complaints about water quality but the evidence in growing that many shallow wells in Belarus have a too high nitrate content, mainly caused by (past) nitrogen fertilizing and leaching from pit latrines and manure heaps.

6. In many schools the sanitary facilities are in need of replacement or repair. The absence of proper facilities (including toilet cabins which can be locked) are especially a problem for girls when they have their menstruation.

7. Urban areas and part of the rural communities have central sewage systems with water flushed toilets connected. The respondents of the 4 rural communities (3 villages and one town) complained about the state of the sewage system, especially about pumping and/or treatment facilities not (properly) functioning. All dachas and part of the private houses in the villages and the town have outdoor latrines (with pit or bucket) or (indoor) water flush toilets with own septic pit. Most septic pits lack an impermeable bottom. Some respondents reported to use the content of the pit to fertilize their potatoes or to have it composted (apparently with other compostable materials). A few respondents hire a special truck to empty their septic pits.

8. Solid waste collection systems are in place in cities and the larger rural communities. There is some separate waste collection and recycling, but apparently only at a small scale (mainly paper). In the two smallest villages and the dacha complex the waste is dumped at (semi-legal or illegal) sites nearby. In particular the respondents of one village and the dacha complex see solid waste disposal and/or the nearby dumps as a problem.

9. Participation in community activities is found more in the rural communities than in urbanized areas. The reported gender differences focused on the division of tasks among men and women. Proper toilet cabins for girls in schools emerged as a clear gender need. Both women and men appeared concerned about water (quality) issues. For the apartment block it was reported that the concern about energy saving was brought up especially by male respondents.

1 INTRODUCTION

This report presents the consolidated findings of baseline surveys conducted in 17 communities in Belarus, carried out by local NGOs and local initiative groups in the context of the below described Matra Project. These local NGOs / initiative groups and their communities are the potential partners for this project. The objective of the surveys was to gain insight in the situation of these communities, in particular in respect to water, sanitation, waste and energy.

1.1 The project

The baseline surveys described in this report were conducted in the context of the Matra[1] Project "Developing multi-stakeholder cooperation in the areas of water, waste and energy efficiency in Belarus". The goal of this project is "*to build the capacity of civil society organisations (NGOs), stakeholders from local authorities, citizens and business sector in 10 communities in Belarus to develop tools for multi-stakeholder participatory cooperation, planning and partnerships for sustainable development in the areas of water, sanitation, solid-waste and energy*".

The main expected results of this project are:

1. (At least) 10 baseline surveys conducted in potential beneficiary communities and 3 training conferences conducted for representatives of the NGOs, local initiative groups and/or communities (on water and sanitation, on solid waste and on energy);
2. (At least) 10 concepts for demonstration / pilot projects developed and implemented in a participatory way, tangibly improving people's lives in the concerned communities;
3. Results and lessons learned monitored, analysed and presented at national and international forums and recommendations for national environmental policies formulated.

The project is implemented by Women in Europe for a Common Future (WECF), based in the Netherlands, and Ecoproject Partnership, based in Belarus. The duration of the project is 36 months. The project started in December 2006 with the official registration of the project in Belarus.

The primary target group of the project consists of the staff of Belarus' partner Ecoproject Partnership, about 10 local NGOs and about 50 to 150 persons who would form the project committees in the selected communities, including representatives of the municipal administration, local government departments, local civil society and local private sector.

The secondary target group consists of other NGOs in Belarus (sharing experiences), citizens in the concerned communities who will benefit from improvements, local business representatives involved in the project and local government representatives, participating and learning from the project.

1.2 Methodology

Each NGO or local initiative group interested in participating in the project was required to conduct a baseline survey. At the kick-off meeting for the Project in March 2007 the baseline survey activities were planned. Interviews with key persons and community members would be held, the latter by using a questionnaire (with quantitative, qualitative and some open questions) in order to collect similar and comparable data. A draft questionnaire was discussed and tested in Belarus in April and May.

At the end of May 2007 a WECF team visited Belarus. The results of testing the questionnaire were discussed and Ecoproject Partnership staff was trained in conducting baseline surveys. The questionnaire was adjusted where necessary, and separate questionnaires were developed for schools and apartment blocks. Guidelines and sample checklists for interviewing key persons were discussed. In June staff of Ecoproject Partnership trained representatives of interested initiative groups and NGOs on conducting baseline surveys. The baseline surveys for rural communities, dacha complex and the apartment block were conducted in summer 2007; the surveys for schools and clubs were conducted after the academic year had started, i.e. after September 2007.

[1] The MATRA programme has the objective of supporting civil society in Central and East European Countries. The Matra Programme is financed by the Netherlands Ministry of Foreign Affairs.

The information to be collected focussed on the following topics: agricultural activities (if any), housing and energy, water and sanitation, solid waste management, health issues and main problems and the priorities as perceived by the interviewees. Information was also meant to be collected on issues such as household incomes, gender issues and community activities.

The NGOs / initiative groups interviewed relevant key persons (e.g. mayor or school principal) using checklists for which samples were provided. Community members were interviewed using the questionnaire. The aim was to interview at least 15 to 25 persons, which number also depended on the size of and diversity of the target population. The selection of the respondents was through "purposeful sampling", ensuring that different categories of respondents within the community would be included. In case of the rural communities, dacha cooperative and the apartment block, the questionnaire respondents were men and women of households of the community. In case of schools and clubs, the respondents were mainly pupils from grade 4 or 5 upwards. In a few school surveys also adults were interviewed through the questionnaire (teachers and/or technical staff).

The NGOs / local initiative groups processed the collected data and prepared a concise report on the collected information. This information was translated into English and formed the basis for this report.

The response of NGOs / local initiative groups was larger than expected as 17 groups -instead of the expected 10- actually conducted such a survey in their community and submitted a report:

- 4 communities were rural (3 villages and one town with some rural characteristics);
- 1 community was a dacha cooperative;
- 1 community was an apartment block; and
- 11 communities were schools (8), clubs (2) or a children's rehabilitation centre (1).

Not much feedback was given on the actual process of conducting the surveys. However, representatives of two groups spontaneously informed that interviewing community members about environmental issues had had an impact on increasing their awareness on such topics.

The fact that the NGOs / local initiative groups used the same checklists and questionnaires for similar communities helped very much to compare and summarize the information in this report, even though not all information was always exactly comparable or similarly detailed. Overall, the quality of the baseline survey reports seemed satisfactory, especially considering that most persons who conducted the surveys and prepared the reports had no such experience. A few reports presented rather brief information, for example, providing one answer per question of the questionnaire, giving the impression that all respondents gave the same answer[2]. Such survey reports were mostly prepared by groups which had not participated in the baseline survey training. The large majority of the survey reports, however, presented the various answers per question, indicating the number or percentage of the respondents who gave such an answer.

Since the processing of the data was done by the group who conducted the survey, it was not possible to do any cross tabulation afterwards. Considering the purpose of this baseline survey, this was not felt as a major deficiency; however, cross tabulation could have been enlightening, for example, to assess whether men and women gave deviating or similar answers (i.e. to assess gender differences).

1.3 Information on Belarus[3]

General information

Belarus has a population of 9.7 million people (July 2007 estimate) and a population density of about 48 persons per square kilometre. The population growth is negative (around -0.4%) with a fertility rate of 1.22 children/woman (the replacement fertility rate is 2.1 for industrialised countries). The capital Minsk has a population of 1.78 million (2006 estimate). Life expectancy at birth was 63 years for men and 74 for women in 2004, which is a decrease from the 1990 figures (66 and 76, respectively). Adult literacy rate is 99.8 and 99.5 % for men and women, respectively, with 12 years as expected number of years of schooling.

[2] In writing this report, it was assumed that such answers were the most common answers, rather than answers given by all respondents.

[3] Sources: World Bank website; CIA fact book; Report on expert meeting on water problems in Belarus; Report on waste training; OECD website

The total labour force is 5 million people, with women forming 49%. Officially registered unemployment is low with 1.6%; however, there is a relatively large number of persons underemployed or unemployed without being registered. Belarus' Gross National Income (GNI) per capita was estimated at 2,760 USD for 2005. For 2006 the estimated GDP (gross domestic product) in terms of purchasing power parity[4] (PPP) was 7,800 USD/capita. Poverty as defined as a daily income of less than 2 USD/day was 2% of the population in 2005. In practice, especially pensioners without additional income and the lowest income families have difficulties to make ends meet.

Agriculture provided 9.5% of Belarus' GDP in 2005 and industry 41.2%. Belarus' main agricultural products are grain, potatoes, vegetables, sugar beets, flax, beef and milk. Its industries produce machine tools, tractors, trucks, motorcycles, TVs, fertilizers, etc. The industrial growth rate estimated for 2005 is 15.6%. Belarus' economic growth in 2006 was 9.9%.

The following table presents the mean monthly and annual rainfall as well as the mean monthly temperatures of Minsk[5] (in mm and ºC).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rain	40	34	42	42	62	83	88	72	60	49	52	53	**677**
Temp	-6.9	-5.8	-1.4	6.0	12.9	16.1	17.3	16.5	11.7	6.3	0.8	-3.8	

Gender issues in Belarus

Gender disaggregated data on certain key indicators as life expectancy and literacy rates are available for Belarus (see also above). The Gender-related Development Index (GDI) ranking as established in UNDP's 2007-2008 Human Development Report is 64 for Belarus (out of 177 countries). Statistical data demonstrate that gender inequalities not always disadvantage women. Examples of male disadvantages are the lower life expectancy of men (10 years less than women) and the lower combined enrolment for all levels of education (women: 91; men: 87) (2005 data). But women have a lower estimated earned income (6,236 USD PPP) than men (9,835 USD PPP) and hold fewer seats in Belarus' parliament (29% in the lower house and 31% the senate in 2007).

More general gender studies for transition countries[6] demonstrate that the processes of economic transition are generally not gender neutral. Both women and men pay a price. Boys tend to drop out of secondary school in greater numbers than girls and men's life expectancy was reduced, whereas the dismantling of state support has increased the burden on women for nurturing activities. Groups at special high risk with respect to poverty are the female headed households and the single elderly females.

Drinking Water

Belarus is a relatively water rich country and the available sources are sufficient to meet the current and future demands. During the period 1997 – 2003 the total water use has even declined with 5%. According to the census of 1999, 89% of the urban households were connected to a piped water supply system and 25% of the rural households.

The potable water sector is vertically integrated from the municipalities to the central government level (Ministry of Housing and Utilities). The national government develops water strategies and controls their implementation. Water utilities (Vodokanals) are the property of municipalities and the MHU provides investments for the development of water infrastructure.

The reliability and safety of the water services are unsatisfactory. There are frequent service interruptions and drops in pressure in distribution systems as well as problems with water quality, ranging from colour, taste, odour and bacteriological contamination. Distribution systems experience significant losses and per capita consumption is high: in Minsk the average residential consumption is

[4] This GDP in terms of PPP adjusts the "normal" GDP taking into the account the purchasing power in the concerned country.
[5] Based on readings for the period 1961-1990 in Minsk (at 53.9 N and 27.6 E; altitude 231 m).
[6] For example: Gender in Transition, by Pierella Paci, World Bank (2002)

302 litres per capita per day. Deferred maintenance of existing infrastructure, low cost recovery and managerial weaknesses contribute to the vulnerable situation of the water utilities.

Other important water problems include pollution of natural water sources, inefficient use of water resources and the natural contamination of groundwater with iron and other naturally occurring minerals (calcium and manganese) as well as with agricultural pollutants. While the iron concentration observed in some places does not represent an imminent health hazard, the colour and odour of the water make it unfit and unpalatable for domestic use without treatment. The high iron content in ground layers is the main reason for the high iron content of water, although old iron pipes can also be a cause. And even if the water at the cleaning station complies with the standards, water can become polluted (again) in pipe systems, many of which have deficiencies such as leaks allowing the infiltration of polluted groundwater.

In rural areas shallow wells are the common water source. Here the pollution is higher, with about 30 to 40% of the wells showing water below standards mainly due to bacteriological and nitrogen contamination. Other sources indicate that even up to 70% of the wells have a nitrate content exceeding the standards. The main causes for the high nitrate content of the upper ground water are manmade: fertilizer use in agriculture and leaching from sceptic pits and manure. As alternative water sources (such as deep wells) and methods to treat the water are often too expensive for small rural communities, the best way to address this nitrate problem would be the mitigation of the sources of pollution. If such measures are taken, it will take years before ground water becomes cleaner.

Sanitation

According to the 1999 census, 86% of the urban households were connected to a sewerage system and 22% of the rural households. Especially in rural areas latrines are still commonly found.

Not all sewerage collected by central systems is (properly) treated, as proper treatment plants may be absent or out of order. Functioning treatment plants in Belarus have various problems: nitrogen and phosphor are not sufficiently reduced, sewage water is not (sufficiently) disinfected and only a small part of the sludge is recycled. The present treatment is aerobe, which is energy demanding compared to anaerobe treatment.

(Rural) households not connected to a sewerage system have often traditional toilets with sceptic tanks without a water proof bottom, allowing the infiltration of sewerage liquids into the soil. Awareness on the need for septic tanks with waterproof enforcement and bottoms is still low in spite of legislation and sanitary requirements. There are special services for emptying such tanks in Belarus.

The legislation in Belarus does not have regulations that would allow eco-sanitation. A main obstacle to ecosan toilets is the distance from the toilet with its septic tank to living quarters which must be at least 20 meters. Some sources also doubt the possible demand for “eco-sanitation” products, because of the wide availability of cattle manure.

Energy

At the time of independence in 1991, Belarus inherited extensively developed electricity, gas, and district heating sectors, and significant oil transit and refining capacity. The country, however, is endowed with only limited indigenous energy resources and is, therefore, heavily dependent on imports of primary energy fuels, essentially all from Russia. In 2005, net imports accounted for 86 percent of Belarus’ total primary energy consumption. The country occupies a strategic location between Russia and the European Union.

Belarus long enjoyed discounted energy import prices. Russia’s recent actions to introduce market-based prices for its energy exports to the CIS countries, however, are likely to result in phasing out Russian energy subsidies to Belarus. Before 2007 Belarus bought energy in Russia for the same price as Russian consumers. Now higher prices are paid, which, however, are still lower than (world) market prices.

The energy sector structure and institutional arrangements show a number of limits and weaknesses that affect its ability to raise commercial financing and to improve efficiency. Improving energy efficiency would be a win-win option for addressing concerns about energy security. The need for

action in these areas has also be recognised by the Government of Belarus. Also wide-scale reforms in the demand and supply sides of the heating market are necessary since they will yield substantial energy saving benefits, in particular gas.

The recent raise in gas and electricity prices not only affects Belarus' economy, also households and institutions as hospitals and schools are directly affected. Especially the poorly designed and outdated energy systems dating back to the Soviet era waste significant resources. This is a recognised problem and is already addressed by projects such as the World Bank funded *"Social Infrastructure Retrofitting Project*"[7], aiming to optimize energy consumption in the public sector (schools), saving funds (due to a more efficient energy use) and improving health (warmer and better lighted classrooms).

Solid waste

Belarus produces about 2 million tons of solid waste per year (in 2000), which is over 2 tons of waste per capita, with toxic wastes as a main problem. In Soviet times a lot of waste was exported to other parts of the Soviet Union; now waste is either sent to conventional dumpsites (if not too toxic) or piled up outside factories. It is estimated that about 85% of the solid waste is dumped at waste sites. There are 4500 compact landfills in Belarus at present (2007). The tariffs for waste collection are fixed by the local authorities (thus differ per municipality) and is still comparatively cheap.

Especially in rural areas the disposal of solid waste has been a long-standing problem with many unauthorized dump sites. The country has been cleaning up such sites at a high budgetary cost, developing mini landfills and grounds for provisional waste storage instead. By 2005 the illegally disposed waste had decreased from 0.7 to 0.4 million tons. In order to facilitate the recycling of waste materials, 84 stations for sorting municipal waste were opened in 2005, allowing a 30 to 40% reduction in waste volumes to be land filled, generating new jobs and reducing the operation costs of disposal sites by 4-6%.

Rural areas are still partially covered by municipal waste collection services. Especially dacha complexes lack such services.

Waste separation –except for paper- is not yet common in Belarus. In several districts of Minsk a small company ("Ecology of the City") collects separate waste (glass, paper, textiles and plastic), which they clean, sort and shredder and then bring it to a recycling facility.

Environmental problems and priorities

The above sections illustrate that safe and secure drinking water supply, (rural) sanitation and waste water treatment, improving energy efficiency and security, as well as waste management are important environmental issues.

The CIA factbook lists the main environmental issues in Belarus as soil pollution from pesticide use and the contamination of the southern part of the country with fallout from the 1986 nuclear reactor accident (Chernobyl). World Bank sees dealing with its important environmental agenda as a main challenge for Belarus, in particular also with the continuing legacy of the Chernobyl catastrophe.

The 2006 Belarus' National Action Plan on the Rational Use of Natural Resources and Environmental Protection (2006-2010) includes waste management and the protection of rational use of water resources among its priorities, next to various other protection measures, biodiversity and environmental monitoring and education.

1.4 This report

Chapter 2 of this report presents the findings of the four communities located in rural areas, providing detailed information on each community in tables within the text. Chapter 3 describes the only dacha complex within the survey sample and Chapter 4 the only apartment block community. Chapter 5 describes the 11 school and club communities /institutions. That chapter summarizes the findings of

[7] The main focus of this project is to install new high-efficiency boilers and heating substations. The project also targets the renovation of interior lighting and the refurbishing of windows, walls, roofs and the like.

11 institutions as their more detailed description would reduce the legibility of this text. Instead, the detailed information on the schools and clubs are presented in Annex 1. This report has been written by Kitty Bentvelsen of Femconsult.

Acknowledgement

The consultant would like to thank all the members of the local NGOs or local initiative groups, who conducted –in their free time- the baseline surveys, processed the data and prepared the baseline reports. The staff of Ecoproject Partnership has played a key role in training and supporting the local NGOs and initiative groups in doing baseline surveys. They also ensured the translation of the 17 baseline surveys into English. Special thanks go to Natallia Andreyenka, who took upon her the tedious task to sort out all uncertainties and missing information the consultant came across when writing this report.

2 FINDINGS VILLAGES AND TOWN

2.1 General information

This chapter provides information on four communities located in rural areas: Belaruchi, Komarovo (villages), Smilovichi[8] (town) and Druzhnyj, the latter a settlement of 3 streets belonging to Stakhovtsy village. Table 1 provides some general information.

Table 1: General characteristics of the four communities

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
District	Logoisk	Myadel	Myadel	Cherven
Oblast	Minsk	Minsk	Minsk	Minsk
Distance to Minsk	About 20 km	About 150 km	About 170 km	About 30-35 km (bus every 30 minutes)
Distance to town with reasonable facilities	Logoisk: about 25-30 km	Zanaroch: 2.5 km	Svir: 5 km; Myadel: 40 km	0 km
Population	290 persons	57 persons (31 families)	753 persons	About 5800 (excluding about 2750 students from elsewhere)
Type of population	Majority are pensioners	Druzhnyj: families who moved from the Chernobyl zone; Old Stakhovtsy: mainly pensioners	282 pensioners (37% of persons); relatively % of people with higher education (about 20%)	Relatively balanced ratio pensioners : families with children. During academic season about 2750 extra students.
Type of families	Pensioners (1 or 2 persons); nuclear families (average 4 persons); some extended families	In Druznyj: mainly nuclear families with children (parents between 30 and 45 years old). Many families took up orphans.	Families of pensioners and nuclear families (average: 3-4 persons)	
River / lake	River Vyacha	Lake Naroch	River Vyacha	Volma River
Number of respondents	15	21 (about half male, half female; some questionnaires answered by both). Average age: 39	20 (16 women and 4 men), of whom 3 are pensioners	25 (13 women +12 men), of whom 5 are pensioners

There is significant out-migration of young people from Belaruchi and Komarovo and consequently the proportion of elderly people (especially pensioners) is increasing. As also the birth rates are lower than the death rates, the number of inhabitants is declining in these two villages. In Smilovichi there is both in- and out-migration: there are young people who move out to Minsk, but there are also families from outside who come to establish themselves in Smilovichi. Most new-comers settle in a presently expanding new neighbourhood where they construct new houses. There is a large student population in Smilovichi: students from the Minsk region who study at the lyceum (a vocational training institute with about 750 students) or the Agricultural College (with about 2000 students). Druzhnyj is a new settlement constructed in 1993 at 1 km from the old village of Stakhovtsy for families from the Chernobyl zone[9] affected by the nuclear power station accident.

There are two regular schools in Smilovichi (i.e. grade 1 – 11, corresponding to age 7 - 16), with 400 and 300 pupils, respectively. Other facilities are well present here: a hospital, several large (state) and small (private) shops, a post office, a cinema/disco (a former catholic church), a library, a cultural

[8] Smilovichi is becoming more urbanized and cannot be seen anymore as an actual rural community. However, there are still a number of aspects that Smilovichi has in common with villages such as the presence of homestead gardens, shallow wells as drinking water source and pit latrines in the older parts of the town.
[9] originating mainly from Khoiniki, Bragin, Narovlya and Stolin districts

centre and two Kindergartens. Because of the college and lyceum, Smilovichi has relatively good sport facilities such as a stadium, 400 m track, swimming pool and an ice-skating ring, which are also accessible to the non-student population of Smilovichi. The town has a also church and a mosque, the latter especially for the inhabitants of Tatar ethnic background.

Smilovichi is a place with a rich history, signs of which are still visible. In particular, Smilovichi's park was an aristocratic land owner's estate in the past; the ancient villa is now partly used as office of the Agricultural College, but is in urgent need of repair. Before the Second World War Smilovichi had a considerable Jewish quarter; now only the Jewish cemetery is left.

Belaruchi has a school with 28 pupils and a Kindergarten, two shops (one private and one state), a post office, an ambulatory and obstetric care service, an orthodox church and a culture club.

Komarovo has a school with 130 pupils, five shops and a catholic church.

Druzhnyj is too small to have its own facilities; instead people go to Zanaroch (at 2.5 km) for facilities such as school (which has 60 pupils), Kindergarten and church.

Employment and income levels

Sources of employment are most diverse for Smilovichi. Many of the working people of Smilovichi are commuters, either working in Minsk (e.g. in machine construction plants) or at the national airport (which is at about 20 km). Within the town itself, the Agricultural College and the lyceum are considerable sources of employment (each with about 100 employees), as well as local industries, especially the leather factory (250 – 300 employees), a furniture factory (about 100 employees), tea packing and other packaging industries (about 100 employees) and the felt factory. There is also an agricultural producers co-operative.

In Komarovo the main sources of employment are the educational institutes (school and lyceum) and agriculture. The main workplace of Belaruchi is the collective farm "Semkovo"; people also work in Minsk. The inhabitants of Druzhnyj are mostly employed in agriculture (collective farm), and a nearby sanatorium on lake Naroch. 8 of the 31 families work as "family orphanages": bringing up orphans, for which they receive state subsidy.

Only the baseline survey of Komarovo contained actual information on the family income of respondents, although a majority preferred not to share such information (mainly respondents with an apparently higher family income). 8 respondents provided such information and their combined family income varied between 600,000 and 1,5 M rubles per month per family, with an average of 980,000 rubles. Due to the apparent under-reporting of the higher incomes, actual average incomes may be higher than this. Family incomes are not always or only from work, but can also include pensions[10] and/or children's allowances.

The survey report of Smilovichi provided information on unemployment: in 2 of the 25 surveyed families there were persons without job. This number excludes 2 housewives and 3 women on child-rearing leave who are not working or in search of work.

The survey report of Belaruchi estimated that about 25% of the households are considered as poor.

In Druzhnyj there are 3 unemployed persons.

2.2 Agriculture

Agricultural production by respondents is common in all four communities, but mainly at a small scale, at homestead level and for own consumption. Table 2 provides an overview:

[10] Most pensioners in Belarus live from their pension only (on average about 300,000 rubles per month or 100 euro), but some still hold a job and therefore have an additional income to their pension.

Table 2: Overview of agricultural production for the four communities in rural areas

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
No of respondents involved in agriculture	All 15 (small homesteads owned; larger areas leased)	All 21	All 20 (on own and/or leased land)	20
Size of land cultivated	0.03 – 25 ha (av: 6 ha)	0.15 – 0.35 ha	0.1 – 1 ha (av: 0.32 ha)	0.05-0.3 ha is owned and on average 70% of this is cultivated
Kind of crops	Potatoes, cereals, beetroots and vegetables as cucumbers, onions, carrots, tomatoes, pumpkin, greens, cabbages, paprika	Potatoes, beetroots, carrots, onions, cabbages, cucumbers, tomatoes, etc.	Potatoes and vegetables(18), cereals (5); Only decorative gardens (2)	Potatoes, vegetables, berries
Purpose of crop production	13: for own consumption only 2: also for sale	About 90% for own consumption and preservation; 10% for sale (cucumber, strawberry, tomatoes)	19: own consumption; 1: also sells cereals	For own consumption and for relatives
Livestock	5: no animals 1: only poultry 9: cattle and poultry (1 cow, 1-2 pigs, up to 6 goats, up to 20 hens/geese, some have a horse)	- A few families keep cows and sheep (3 and 10 in total); - others have only hens and pigs; - some families have none.	14 have animals: -4 larger scale (cows, pigs, horse, poultry) - 6 poultry + few other animals - 4 only poultry - 6 no animals	5 have animals: - 2: cow / horse and poultry or rabbits; - 1: only one cow; - 1: only chicken - 1: only a piglet; 20 do not have any
Purpose of livestock production	8: for own consumption 2: also sell animals	For own consumption	Largely for own purpose	Largely for own purpose
Fruit cultivation	Apples, pears, plums, cherries, raspberries, strawberries, currants, gooseberries	5 families (of 31) have apple trees	Mainly apples, plums and cherries	Apples, pears, plums, cherries
Purpose of fruit production	All: own consumption; Half: also preservation	Trees too young to produce fruits	Own consumption, incl preservation	Own consumption incl preservation
Collecting edible forest products	10: mushrooms and berries	Mushrooms, blackberries and raspberries	All respondents: mushrooms and berries	16 (of 25) gather mushrooms and berries

The above table demonstrates that in the three villages all respondents are producing agricultural produce and many keep livestock and/or poultry. In Smilovichi a large majority still grows potatoes and vegetables, but only a minority keeps livestock or poultry. Most agricultural production (including livestock and fruits) in the four communities is for own consumption, including for relatives.

Of the respondents who cultivate some kind of crop, nearly all use manure to fertilize their land. Those who have sufficient animals only use what their own animals produce. Those with few or no animals, buy the manure. Especially in Druzhnyj and Smilovichi the majority of the respondents bought the manure they applied. In the three villages hardly any mineral fertilizers is used (only 1 or 2 respondents bought); in Smilovichi 9 respondents (of the 20 who cultivate) bought and applied some mineral fertilizers. Nearly all respondents who grow potatoes apply an agro-chemical to fight the Colorado Potato Beetle. Most common is the use of “Karate”, applied once or twice per season. In Smilovichi also other chemicals were reported (especially Dezis), but here were also respondents (4) who collect the beetles by hand (and do not spray). The use of other agro-chemicals is not very wide spread: in Komarovo 7 respondents use some herbicide or pesticide, in Smilovichi 4; in the two other villages none was reported.

The question about the fertilizer use in the communist time was hardly answered, but both from the few answers and from other sources it was learned that especially the use of nitrogen was high.

2.3 Housing

This section describes the housing situation for each of the four communities. Some technical details are presented in Table 3 more below.

Belaruchi:

14 of the 15 respondents live in brick houses; one in a concrete panel house. Houses are one story. Only 3 houses are in good condition, 2 are in poor conditions, and 10 are reasonable. In 3 houses there is draught, either due to old windows or roofing.

Druzhnyj:

All 31 houses of this settlement were newly constructed in 1993 for families originating from the Chernobyl area. The houses were designed and financed by a partnership of the MBOO "EcoDom" and the German charity organisation "Houses instead of Chernobyl". 23 buildings were constructed, of which 15 are one-family houses and 8 two-family houses, the latter with two separate entries each. All houses are of the "beaten cob wood" type, which is with a wooden framework. In general, respondents consider the condition of their houses reasonable, but not very suitable (or even as "bad") for the Belarusian winter. It is said that the houses were constructed according to German technology, not taking into account the Belarusian harsh winter climate.

Komarovo:

18 of the 20 respondents live in their own farmstead, 2 respondents live in rented houses (3 storey apartment blocks). Two of the own houses are wooden, two are brick and the other 14 are concrete houses with "haydite" stuff. All Komarovo respondents consider their houses in a good state of maintenance. Since there is no intention to do a project on energy saving or insulation, no further details on housing have been collected.

Smilovichi:

Two-thirds of the respondents (i.e. 16) live in an own house. About half of these houses are wooden (of which 4 faced with brick), five are made of brick and block, and three only of brick. The other third of the respondents live in apartment blocks of 4, 5, or 9 storeys: 8 own their apartment (1 to 3 rooms), one respondent is renting. Five respondents consider the maintenance state of their house as "good"; the others as "average" or "satisfactory". Still, two houses have broken or missing window panes and six experience draught (five because of cracks in walls and/or between roof, walls and/or windows and one because of a window not closing properly).

Table 3: Some technical characteristics of the houses for three communities

Description	Belaruchi	Druzhnyj	Smilovichi
Floor area	75 m^2	125 m^2 (of single houses) 100 m^2 (of 2 flat houses)	54 – 100 m^2
Height of rooms	2.8 m	2.5 m	2.5 m
Volume	Av: 210 m^3	250 – 325 m^3	135 – 250 m^3
Material walls	Wooden	Clay with hay; wood chips with hay	Logs (9); brick and blocks (5); brick (3)
Material roofs	Roofing slate	prevention coverage, metal tiling, tiles	Roofing slate (14); Refereed (3)
Material floors	Wooden	wooden	wooden
Thickness walls	Up to 0.5 m	About 0.4 m	0.1 – 0.65 m, but mostly 0.25-0.50 m (av: 0.34 m)
Insulation?	Sometimes rubberoid	None	13: nothing; 12 have (various materials)
Windows	12 normal size; 3 large	All normal size	6: large; 18: normal size
Glass?	All double, except 1 house (part of windows single glass)	All double glass, except windows of verandas (single glass)	Most double pane; 1 triple; 1 partly single, partly double; 3 plastic glass packs

2.4 Energy

All households of the four communities are connected to the electrical grid. In case of "persistent defaulting" (not paying the electricity bill) the electricity supply to households is cut off. The most common electrical appliances are refrigerators, televisions and irons. A number of households also have appliances such as electrical washing machines, vacuum cleaners, water heaters, deep freezers, stereo sets, microwaves and/or computers. The survey reports provide information on the electricity use in kWh for Belaruchi (average 200 – 250 kWh/month) and for Smilovichi (50 to 260 kWh/month). The average annual spending on electricity varies between 300,000 to 1.2 million BYR per year. At the time of the survey (summer 2007), the cost of one kWh amounted to 112.1 BYR (mentioned in baseline of Komarovo). For Belaruchi it was said that "*the electricity tariff is high and constantly growing",* this statement, however, applies for the entire country.

Only in Smilovichi there is gasification: 11 of the respondents are connected to the piped gas supply, paying 50,000 to 180,000 BYR per month. All interviewed households in the four communities do use gas for cooking; where there is no piped gas supply, bottled gas is used. The only exception is in Druzhnyj where 2 respondents use electrical stoves. In Smilovichi there are a few households using (electrical) microwaves in addition to cooking on gas.

In Belaruchi, Druzhnyj and Komarovo households use fire wood for heating their houses, which is bought in the forest (or in the national park in case of Druzhnyj[11]). In Druzhnyj also peat briquettes are used for heating (bought from the municipality); in Komarovo the two families living in flats have central heating. In Smilovichi there is a larger variety in the ways houses are heated:

- The apartment blocks have central heating;
- Half of the respondents connected to piped gas use only gas for heating;
- The other half uses both gas, firewood and briquettes;
- And the houses without gas connection use fire wood.

The cost of fire wood is reported to vary between 250,000 and 650,000 rubles per winter (based on data from Druzhnyj and Smilovichi). The respondents of Belaruchi report to pay about 10 - 15% of their household's income on heating and cooking.

2.5 Water

In all four communities there is a central water supply system (cwss), but not all houses are connected. In Belaruchi 87% of the houses are connected, in Druzhnyj 100% (as a new settlement), in Komarovo 30% and in Smilovichi 40%. Apartment buildings (flats) are normally always connected and have in-house taps. Most individual houses that are connected to the cwss, however, have taps in their yards; only a few have an in-house connection. In Smilovichi it is mainly the younger generation who wants in-house connection; households have to pay the costs to install such connections themselves. The water sources for the four cwss are all boreholes / deep wells. Druzhnyj has a 34 m deep borehole and Smilovichi 2-3 deep wells of 20 to 50 m deep. For Belaruchi and Komarovo the depth of the deep wells / boreholes was not provided.

Households have to pay for the water supplied by the cwss. This is not based on the actual water use (i.e. there are no water meters), but on the number of household members. The average amounts vary between 2000 and 20,000 rubles per month per household.

All or most respondents of the four communities are dissatisfied with their (cwss) drinking water supply. Respondents of Belaruchi informed that the pipe system is (too) old (leaking, rusty and polluted) and the iron content of the water too high. In their view repair of the cwss is needed as well as the installation of a deferrization station. People now take drinking water from a nearby spring which is considered clean.

In Druzhnyj the reason of dissatisfaction is the irregular water supply: "*frequent hydrostrikes".* Especially during the summer 30% of the families have no water or the pressure is too low. The main

[11] This is legally bought; illegal cutting would lead to high penalties

problem is that the water tower is hardly more elevated than the street where these families live. The opinion therefore is that a second (higher) water tower is needed to make the supply more regular.

In Komarovo respondents are dissatisfied because of the low quality of the water: iron, lime and too much salt, as one respondent said: "*the water is unfit for drinking, even for washing white linen".* Another informant said the water smelled like sulphuretted hydrogen. Here the need is proper treatment (cleaning) of the water and repair of the system, but the responsible (state) organisations (lyceum and kolkhoz) do not have money for this.

In Smilovichi most respondents connected to the cwss (mostly flat dwellers) were satisfied with the water quality. Key informants said that the supply of cwss water is not reliable ("lack of water") and –in summer- hot water is not supplied. In Smilovichi water samples from two sources were analysed (on 36 elements and F^-, Cl^-, SO_4 and NO_3 anions). The sample taken from the school (cwss) did not have any tested parameter exceeding the standards and hence this water is suitable for consumption (given that tests on micro organisms give a good result).

Respondents of all four communities are willing to pay more for the water if the (quality of) the water supply is improved, as long as the tariff increase is reasonable, which for Belaruchi is an additional amount of 5000-7000 rubles per month.

Table 4: Overview of some details related to drinking water supply for the four communities

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
Water supply among repondents	10: cwss 3: water pump in yard 2: public well	21: cwss	15: cwss 4: own well 1: shared well	8: cwss 7: own wells 3: share wells 2: use neighbour's well 2: own boreholes
% of households connected cwss	87%	100%	30%	40%
Source of cwss water	Spring with artesian water at 1 km from village	Well of 34 m deep; one water tower for the 31 families (the kolkhoz can also take water from this source)	2 deep boreholes (at the Svir Lyceum and at the kolkhoz "Svirskij Kraj")	2-3 boreholes of 20 – 50 m deep
Bath or shower in the house?	9: have 6: to public sauna	All have (as new houses)	15: have 5: own sauna	11: have 9: to public bath house 3: own bathhouse
Problems with cwss water	-pipe system too old -iron content too high (of cwss water) → need for deferrization	-irregular supply / too low water pressure → need for second water tower	-very low water quality (of cwss) → need for repair system and proper treatment	Flats: no continuous supply / lack of water and no hot water in summer

For none of the four communities there is proper information on whether (or how) the central system water is treated at the station before it enters the distribution system.

Houses which are not connected to a (piped) central system take their drinking water from (shallow) wells (3.5 - 8 m deep in Smilovichi; 7-15 m deep in Komarovo). Two respondents in Smilovichi have their own borehole. Just over half of the households taking water from a well have a private one on their own yard; others share a well with neighbours or take water from a public or a neighbour's well. In Smilovichi a majority of the respondents take water from a well; some have a pump to fill up a reservoir. In Komarovo and Belaruchi a minority of respondents depend on water from wells (see also table 3). Wells are not (regularly) cleaned. Especially in Smilovichi, respondents are not satisfied with the quality of the well water: 8 consider the quality as really bad; some respondents are aware of the high nitrate content[12]. It appears that many people drink the water from their wells without boiling or using a filter. A water sample taken from a shallow well indeed had a nitrate content of four times the

[12] During the preparatory visit in Smilovichi, the nitrate content of water of some wells was tested by using indicative strips. The resulting nitrate values were from 100 to over 500 mg/l (with 50 mg/l as the maximum allowed).

EU standard[13], indicating anthropogenic pollution probably caused by fertilizers and/or human or animal waste and is not suitable for consumption.

Komarovo –as the rest of Myadel district- has the highest level of kidney diseases (especially kidney stones) of all districts in Minsk oblast. It is thought that this is connected to the water quality (i.e. hardness of the water, especially Ca and Mn salts), but there are other parts in Belarus where water has a similar hardness, but where kidney diseases are not so wide-spread (i.e. there is no general interrelation between kidney diseases and "hard water"). Even though all respondents in Komarovo think the cwss water is of a poor quality, people do not buy bottled water instead. The NGO who conducted the Komarovo baseline survey is presently already implementing a small project in this community: installing a new central boiler, which will prevent –at least- black oil stains in the water of the cwss.

The surveys of the four communities do not present information on water quality as assessed by a laboratory. Two survey reports state that officially the drinking water quality should be controlled by either the Sanitary and Epidemiologic Station (SES) or the RCGiE (umbrella organisation of SES), but in practice such controls are not always done or the information on test results is not accessible.

Experts at an expert meeting organized by Ecoproject Partnership confirmed that the nitrate content in upper ground water is a (manmade) problem in Belarus - as it is in many other countries of the world. In many parts of the country the water drawn from shallow wells is likely to have nitrate contents exceeding the standards, as was confirmed by the first test in Smilovichi. This nitrate problem is caused by a combination of factors such as fertilizer use on agricultural lands, leaching from manure and infiltration from toilets and septic tanks that have no sealed enforcement and/or a sealed bottom.

All households do have some kind of washing machine, but not all have a shower or bath. Those who do not have a shower or bath inside their house use a public bath house (or Russian sauna) or have their own bath house, see Table 4 for more details.

Only in Belaruchi and Smilovichi there are households that "harvest" rainwater to use for watering animals or plants: about 50% and 20% of the respondents, respectively.

2.6 Sanitation

Druzhnyj, being a relatively new settlement, is the only community where all houses have in-house water flushed toilets and where all are connected to a central sewerage system with a treatment (purification) facility (only for the 31 families; not for the old village). This consists of three successive concrete septic tanks; the sewage is supposed to flow from one tank into the other. However, this treatment system is out of order; especially two tanks are not functioning. Now the sewage flows from the first tank untreated into low places around the tanks, including into the forest.

In **Belaruchi** the majority of the respondents' houses have a toilet connected to a localized sewage system, either flowing into a cesspit (simple septic tank) or into the Vyacha river. Apparently there is a non-functioning sewage disposal plant, which needs to be renewed. A minority of the houses have out-door pit latrines without a seat. Most latrine pits and cesspits are not enforced and have a gravel bottom, thus allowing the liquid part of the sewage to infiltrate into the underground. The pits are emptied by the respondents themselves and the content mostly used as humus. All respondents are dissatisfied with the current sanitation situation as "*sewage is now deposited in places where it should not be*". They think that a proper sewerage system and repair of the treatment plant are needed.

In **Komarovo** three quarters of the respondents have flush toilets linked to the central sewage system; a few have flush toilets connected to an own cesspit / septic tank; and a few others have outdoor latrines (without seat). Some pits have concrete walls and bottoms, others have a permeable bottom. Some (cess) pits (3) are emptied by a special truck (about twice a year @ 20,000 rubles); other pits (2) are emptied by the owners. In the latter case the dug out human excreta is deposited in compost pits. Most respondents are concerned about the sewage system (which has a small scale treatment system). Respondents without connection to the central system would like to get connected as well.

[13] Water with this amount of nitrates pose a severe risk for new born babies until the age of 5 months and should not be used for any baby food or drink. Also older babies and even adults should not consume this water.

In **Smilovichi** there is a central sewage system to which mainly the multi-storey apartment buildings are connected, as well as some private houses. It is said that there is a sewage treatment facility, but this apparently is in need for repair since about 10 years. It is not exactly known –among the informants- what happens now with the sewage water and whether it maybe is flowing untreated into the river. Half of the respondents have flush toilets and are connected to the central system, most of them live in flats. 8 (of the 25) have outside pit latrines (without seat). 4 have in-house toilets but no flushing (or by hand). Those households that are not connected to the central sewerage system have either a concrete (cess) pit, or a reinforced pit with a permeable bottom. 6 respondents hire a special truck to empty their pit (about once a year @ 15,000 rubles), the rest empty their pits by themselves when necessary. The latter bury the pit content on unused land (3), put it in a compost pit (6) or use it as fertilizer for potatoes (3). 7 respondents are satisfied with the current sanitation situation, the others not: they either want to get connected to the central sewerage system and/or want the pumping or treatment station to be repaired.

Households that have a connection to a sewage system or a cesspit also dispose their waste water into this system. Households with outdoor latrines either dispose their waste water into the streets, into soaking pits or in the compost pit.

Table 5: Overview of the sanitation situation for the four communities

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
Type of toilets	12: toilets connected to local sewerage systems 3: outdoor latrines without seat	All: water flushed toilets with seat (indoors)	15: water flushed toilets linked to central sewerage system 2: idem, but into cesspit 3: outdoor latrines without seat	12: water flushed toilets linked to central sewerage system 8: outdoor latrines without seat 4: in-house toilets, but flushed by hand
Satisfied	No one	No one	Hardly	7 (of the 25)
Main problem regarding sanitation / sewerage system	Sewage deposited where it should not be; treatment plant in need of repair.	Treatment is not functioning	Concern with condition of sewerage system; Remaining houses want also to get connected	Central sewerage system to be expanded for entire town; pumping (or treatment?) system in need of repair

In all four communities the present sewerage and/or treatment system appears not to function properly and is in need of repair. Another issue is that most households who are presently not connected to a central system, would like to get such a connection, but apparently this mostly means an expansion of the current systems.

2.7 Solid waste

In Komarovo and Smilovichi households put their solid waste in waste containers and/or garbage bags after which the waste is collected and brought to a dumping site. There is no waste collection system in Druzhnyj and Belaruchi.

In Druzhnyj the people dispose their waste themselves at the dump site near the village. It is considered, however, that this dump is too close to the houses (i.e. at 300 m), especially because the waste sometimes burns which affects people's health and is dangerous for the houses (fire risk). This waste dump is also used by other villages, such as Zanaroch, Stakhovtsy, Mokritsa and others.

In Komarovo the lyceum of Svir appears to organize the waste collection and people pay 1500 rubles a month.

In Smilovichi the municipality has one garbage truck and two tractors (and three staff). This capacity, however, is considered too small to properly collect the garbage from the entire village. For example, the garbage at the picnic sites along the Volma River is presently not cleared. 18 of the 25 respondents inform that they already pay for the weekly waste collection. Some of the respondents who do not pay for waste collection take their garbage to the dump by themselves.

In Belaruchi there is no solid waste collection system, but all respondents bring their garbage to one of the two unapproved waste dumps at different sites of the village. One dump is an illegal site at 1 km, apparently established by a dacha cooperative and at 40 m of a lake. The other one is at 2 km from the village and is "half-legal", meaning that the sanitary services never approved this site, but it does appear on an official map as a waste dump and also surrounding villages bring their waste to this site. The burning of the waste at the dump sites, especially the burning of (also) plastic waste by summer residents (of the nearby dachas), is seen as a problem.

Respondents of Belaruchi, Druzhnyj and Smilovichi (especially those who do not pay yet) are willing to pay something if solid waste collection is improved. (No data for Komarovo)

In all four communities some of the respondents burn some of their waste, mainly paper, small wooden waste and/or garden waste. Especially in Belaruchi some respondents mentioned to burn plastic waste in their oven. In Smilovichi one respondent burns all solid waste. Almost all respondents are aware that burning plastic is affecting people's health, but, as one respondent of Smilovichi said: "*all the same we burn it in the bath house or in the stove".*

Animal dung is either composted or directly applied as fertilizer; in Smilovitchi two respondents sell part of the manure of their animals. In the three villages most respondents' households do composting; in Smilovichi 7 of the 25. In general, manure, garden waste and/or kitchen waste are being composted. A few households add the human excreta -dug up from their latrine pit- to their compost. Almost all respondents (except those without a garden) are interested in composting.

Belaruchi has an additional waste problem. There are derelict storehouses which are said to contain agricultural fertilizers. It is not known whether these storehouses perhaps also contain pesticides. It appears that the exact content of the storehouses is unknown and needs further investigation. It is also alleged that the storehouses would contain toxic ashes from waste burned in Germany in the past.

2.8 Health Issues

Smilovichi is the only of the four communities that has its own hospital and polyclinic, located in a new building. There are 24 beds and is staffed by a therapist, dentist, surgeon and midwife; there is a children's department, a physiotherapy room, a laboratory and a ambulance service. In case of serious problems, patients are sent to the hospital in Cherven (at 30 km); it also happens that specialist (e.g. gynaecologist) come from the regional hospital.

In Belaruchi there is ambulatory and obstetric care service; the regional hospital and polyclinic are in nearby Logoisk (at 25 km).

In Druzhnyj nor Komarovo there are any health facilities. People from Druzhnyj can find a doctor in Zanaroch (at 2.5 km) and a regional hospital in Myandel. The people from Komarovo find a local hospital in Svir (at 5 km) and a regional hospital also in Myandel.

In all four communities respiratory diseases, colds and/or catarrhal[14] diseases appear main illnesses i.e. mentioned by resource persons and/or by various respondents. In Belaruchi also cardio-vascular diseases and alcoholism are mentioned as common, in Druzhnyj caries and in Komarovo also cardio-vascular diseases and kidney diseases. In the latter region especially kidney stones are widely found. It was reported that even the Association of Medical Services refers in a report to the high incidence of kidney diseases in Myadel district (in comparison to other districts of Minsk oblast), which is allegedly caused by environmental conditions (apparently the poor water quality is meant).

The respondents themselves reported the following health problems as those which mostly affected themselves or their family members in the year prior to the interview:

- In Belaruchi: hypertension, heart, kidney, stomach, flu and thyroid gland problems;
- In Druzhnyj: flu, respiratory diseases and caries;

[14] Catarrh = "runny nose" related problems (or nasal congestion), usually caused by cold, flue, or allergies such as hay fever.

- In Komarovo: 18 of the 20 respondents claim not have had any health problems in their family last year; the other 2 have catarrhal disease (1) and kidney disease (1);
- In Smilovichi: catharrhal diseases (in 21 households), gastroenterological diseases (6), high blood pressyure, kidney problem, head aches and pyelonephritis (kidney infection) (each 1x).

When asked whether the respondents thought that environmental problems affect their health, nearly all interviewed people answered positively. The main identified problems varied:

- For Belaruchi respondents: the Chernobyl nuclear power station accident;
- For respondents of Druzhnyj: hazardous waste and emissions of industries;
- For Komarovo: the poor water supply system (i.e. bad water quality) and the ground water polluted by sewage (including the too high nitrate content),;
- For Smilovichi: car exhausts, nitrate in drinking water and bad water and air quality; 2 respondents also mentioned the impact of Chernobyl.

In all communities, (part of the) respondents considered the current sanitation situation as affecting health, except in Belaruchi ("*no problem as our ancestors lived that way").* Those who recognised a problem either referred to bad odour, flies and/or cold in winter (especially regarding the conventional outdoor latrines) or the absence of a properly working sewerage system or treatment plant.

Nutrition

There is not a large difference in eating patters between the four communities. Bread is eaten daily by almost all respondents and their family members. Potatoes, pasta and/or porridges are very regularly[15] consumed, by a minority even daily. About half of the respondents consume milk products and meat daily; the other half regularly. Eggs are eaten regularly or daily. Most respondents eat vegetable and regularly or even daily. A few respondents eat vegetables only seasonally or sometimes. The same applies to fruits; one respondent mentioned to buy fruits only if there is money.

Respondents were also asked to estimate how much their family approximately spend on food items. For Belaruchi and Druzhnyj this was answered as a percentage of the income: 50 – 70 % and 70%, respectively. For Komarovo and Smilovichi amounts in rubles were mentioned. The average monthly amounts spent on food varied from about 150,000 to 750,000 rubles among respondents' households, apparently depending on family size and level of income. Households that grow own food crops and/or keep some livestock are likely to spend relatively less on food items. The average amount which is monthly spent on food is 340,000 for Smilovichi and 315,000 for Komarovo.

2.7 Gender issues

The main issue analysed here is the division of tasks between men and women. Most respondents of the four communities[16] recognised a certain task division between the men and women of their household. Women do mostly tasks such as cleaning, cooking, laundry, child care (including accompanying children to the doctor) and care of sick people. Men collect or store fuel wood, build or repair the house, do pest control, look after the horse (if there is one) and do agricultural work. The up-bringing of children is usual a common task as is shopping and looking after the domestic animals. Children often help with cleaning or washing dishes, weeding and/or gathering beetles (in potatoes).

There are some tasks that are less clean-cut:

- In Belaruchi working in the kitchen garden is a man's task, in Komarovo and Smilovichi a woman' task (or sometimes both);
- Fetching water is either a man's task or a common task (of husband and wife) among respondents in Smilovichi;
- Four women respondents of Smilovichi said that they "do everything" as well as one man of Komarovo (it could not be checked if they are single);
- In 3 of the respondents' households in Komarovo all tasks are done by both husband and wife, depending on who has time; and

[15] In this context "regularly" has been defined as several times a week.
[16] In Druzhnyj one person doing the survey came to the conclusion that "all tasks are done mutually by men and women", whereas another resource person from this same community thought the division of tasks here was typical as in other regions of the country.

- One male respondent in Smilovichi "does everything he is asked to do".

Within the surveyed households less women than men were found to be employed. As demonstrated by the data from Smilovichi, a few women "choose" to be housewives (2 of the 10 questioned non-pensioned women). Another 3 women (out of the 10) were on child rearing leave. 5 of the 10 (non-pensioned) women were holding a job, against 11 of the 12 men (one man was in search of work).

There is no clear information collected about possible different needs of men and women.The visit to Smilovichi gave the impression that mothers are concerned about the drinking water quality, but it is likely that most fathers also are. A more general fact is that women and girls of households that have only outdoor toilets are more affected than men when using these, especially in cold winters.

2.10 Community activities

A clear difference emerged between the town Smilovichi and the three other communities regarding the involvement of the respondents in community activities. In Smilovichi, 19 of the 25 respondents are not involved in community activities. Although the sample of respondents cannot be considered as a truly representative sample, this finding appears in line with the more urban character of Smilovichi. Table 6 gives a further overview.

Table 6: Overview of the involvement of the respondents in any kind of community activities

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
Respondents involved in community activities:	Involved in: -parent committee -church -village council (the executive committee of the local authority) -club	12 in total: 5: church 2: parent committee 4: bring up orphans 1: run a family orphan's house	16 in total[17]: 5: catholic church 3: parents committee 2: consumers' cooperative 8: social unit 1: deputy in local Soviet	6 in total: 2: church 1: paren't committee 2: MP-21 (local initiative group) 1: deputy of local council
Not involved:	4 (out of the 15)	8 (out of the 21)	4 (out of the 20)	19 (out of the 25)
Available community facilities (excl. health and shops)	-orthodox church -culture club -local council - school and KG[18] - Local Initiative Group on Agenda 21	In Druzhnyj: - Local (informal) group on environmental issues In Zanaroch: - church - school - Kindergarten	-catholic church - NGO "Women revival of the Naroch region")	-church and mosque -various sport facilities (any sport clubs?) -cinema/disco -cultural centre and library -2 schools and 2 KGs - Local Initiative Group on Agenda 21

Respondents were also asked whom they would approach in case of any problems. In all communities, except Druzhnyj, relatives were mentioned most often. In Druzhnyj respondents would most often approach neighbours; this may be explained by the fact that Druzhnyj is a relatively recent settlement and –otherwise than in other villages- people do not have relatives living nearby. In Belaruchi, Komarovo and Smilovichi "friends" came at the second place as people to turn to when in need of help. A few respondents (of those three communities) said that they also can approach neighbours, colleagues or the village council. Smilovichi was the only community where respondents (3) told that they have nobody to ask for any help. An additional two respondents in Smilovichi commented that they would turn to the President of the Republic and to God, respectively.

2.10 Needs and priorities

Respondents were asked both about the main problems of their own households and about the main (environmental) problems in the village. Sometimes these problems coincided, for example, all

[17] The specification adds up to over 16, as a few respondents are involved in more than one activity.
[18] In Belarus it is common that each school has a parents' committee (this also apply to Kindergartens)

respondents of Druzhnyj saw the broken sewage treatment system and the irregular water supply as the main problems of their households and of the village.

Respondents were also asked what they would do if they would have additional money and how they thought the health of themselves and their family members could be improved. Table 7 summarizes the answers for the four communities.

Table 7: Overview of the main problems of the respondents

Description	Belaruchi (N=15)	Druzhnyj (N=21)	Komarovo (N=20)	Smilovichi (N=25)
Main problems of own household	-Low salaries -high food prices -energy very expensive (electricity, gas, wood, petroleum, etc.)	All: -Sewage treatment not functioning; -Irregular water supply	7: financial problems 4: absence of good water 3: absence of sewerage 2: health concerns 2: shortage of time 2: no problems	16: financial problems 1: old house and family conflicts; 1: fear to loose job 1: absence of piped water supply and how to preserve good health 1: lack of pride and pertinacity
Main environmental problems in community	-low quality of drinking water -no proper facilities for solid waste (no containers, no collection) -sewage system in need of repairs -need for purification system of water, including a deferrization station	- Risk of contagious diseases due to sewage left untreated and not being discharged - Solid waste ground at 300 m which is too close (various villages dump their waste here)	17: poor water quality 2: bad condition of the sewerage system 1: no problems	9: the industrial plants situated along the river 5: the dirty river 4: absence of piped water supply, sewerage system and/or public toilets 3: rubbish in streets, unorganised dumps and the tannery; 2: the (narrow) road through the town: cfigueres@iicd.org very intensive traffic but no sidewalks (dangerous)
If additional money?	-holiday (tourist trip) -repair water supply -repair Kindergarten -connect house to water and gas supply- -education of children	-to remove above problems	4: improvement environmental conditions 4: improvement water quality 3: better food 3: healthier life 2: better medical services 1: reconstruction sewerage	7: repairing / improving house 7: connecting to water and gas supply 4: on the family 2: building new house 1: flat for daughter and car for husband 4: no reply
How to improve health?	-	-healthy nutrition -annual recovery[19] of children and adults -clean drinking water -forest not polluted by sewerage	Same as above	9: more money 5: improved ecological situation 3: more time with family and to rest 1: better housing 1: healthier food and sports 1: more vitamins in diet 2: periodic recovery (incl going to sea) 3: no reply

[19] E.g. visit to sanatorium. According to the legislation of Belarus the people from Chernobyl areas have the right to visit a Belarusian sanatorium once a year for free (especially children)

3 FINDINGS APPARTMENT BLOCK

3.1 General information

One baseline survey has been conducted among dwellers of an apartment block. The findings of this survey are presented in this chapter.

The concerned apartment block “Burdeinogo”, build in 2002, is located at 37 Burdeiny Street at the outskirts of Minsk. The block is located near a busy street with considerable traffic. Not far from the block is a (temporary) construction site that causes dust, noise and vibration. It is still considered that the block is surrounded by “enough planting”, including flower beds and front gardens. The complex’s clearance services look after these gardens. It is common that fertilizers are used in these gardens. Pesticides (anti-rodent prophylaxis) are once or twice a year applied inside the building to control rats. In 2007 the refuse chute hole was disinfected for the first time since the building existed.

The territory around the block is normally kept clean and free of litter. A problem is that dogs are let out in unauthorized places, polluting the area with their excrements. Another problem is the large number of cars being parked around the building.

The block contains 197 flats divided over nine floors. The dwellers are owners of their flats and the form of management and housekeeping is “condominium”. The total number of people living here is 499 (240 male and 259 female); the average number of persons per flat is 2.5. 175 of the inhabitants are children under 18 years.

The survey was conducted in summer 2007 among 20 respondents (10 women and 10 men), representing 20 of the 197 families living in the apartment block. Age groups:

- 2 respondents were younger than 30;
- 9 were between 30 and 45 years of age;
- 6 between 45 and 60;
- and 3 older than 60 years.

A large majority of the respondents is working: 18 of the 20, among whom two of the pensioners. The two persons who were not engaged in paid work are a pensioner and a mother on maternity leave. 15 of the 20 families can be considered “middle aged”, 3 of which are “broken” families. There are two young families, and 2 pensioners’ only households (of which one is single). There is one household with a disabled person.

3.2 Housing and energy

The apartment block is made of reinforced concrete. The walls are 35 cm thick. The roof is reinforced concrete covered by roofing felt. In most flats the floors are covered by linoleum or ceramic tiles. The windows are of “normal” size. 20% of the respondents have insulated glazing units; the others have double windows with triple glass according to the design. The windows are in a good state and the flats are not considered draughty. Two respondents applied heat insulation slabs and other “heating-up devices”. All respondents think their entry (there are five entries in the entire block) and their apartment are well maintained and are in good condition; 4 respondents qualified it even as an excellent condition.

The volume of the entire apartment block has been estimated as about 36 thousand m^3. The size of the apartments ranges from 40 to 120 m^2, with an average of about 70 m^2; the rooms are about 2.5 m high.

The apartments are heated by a central heating system. The cost of heating –apparently based on an assumed amount of gas- is fixed per apartment, which does not stimulate families to control the temperature. These fixed costs vary per month[20] as the gas price varies per month. For an average flat of 70 m2, the heating costs varied between 12,500 rubles in April and 49,000 in February (in 2007). The radiators in the flats of the respondents were found not to be obstructed by furniture. All radiators have a heat supply control. Each flat is equipped with an automatic temperature regulator (a thermostat). Some respondents already use heat reflective screens.

[20] In January 532 rubles / m3; In February 700 rub/m2; In March 345 rub/m2 and in April 178 rub/m2).

There is no gasification (i.e. no central gas supply); all respondents cook on electrical cookers. Other common electrical appliances are washing machines, refrigerators and certain kitchen appliances. 8 respondents have a microwave, 7 a computer and 2 a dishwasher. Some of the respondents already use energy saving lamps and/or have automatic movement-sensitive switches in their vestibules. The electricity consumption among the respondents is as follows:

- 3 consume less than 100 kWh per month
- 4 between 100 and 200 kWh and
- 13 more than 200 kWh.

The cost of electricity at the time of the survey was somewhat less than 1000 rubles per kWh (i.e. nearly 50 dollar cents or 33 cents of a Euro).

The electricity use for public space is 3783 kWh per month on average, corresponding with an expenditure of 332,000 rubles.

3.3 Drinking water supply and sanitation

The apartment block is supplied with drinking water through a piped system operated by Vodokanal, the water company. The source of the water is the Veleisk-Minsk hydrological system located not far from Minsk, a near-surface source. A key person informed that the withdrawal site at the source is surrounded by waste dumps, which are said to pollute the water. The water withdrawal system is open and needs chlorination, especially in summer. According to the Vodakanal representative, water samples are taken daily (from taps) to check the quality, and even the workers taking these samples undergo a thorough medical examination.

The flats in the apartment block are supplied with cold and hot water (in-house). All houses have water meters for both the hot and the cold water. The average daily water consumption of all dwellers of the apartment block is reported by resource persons as 200 litres per day per person. Half of the respondents informed to use less than 5 m^3 hot and cold water per month; the other half between 5 and 10 m^3. For the entire apartment block 1000-1300 m^3 of hot water is consumed per month and 1500-1800 m^3 cold water.

Many households have filters to clean the water from suspended matter, including sand and small stones. Of the 20 respondents, only 3 use water straight from the tap for consumption; the others use “purified water”:

- 4 buy bottled water;
- 11 use water jar filters; and
- 2 use stationary filters[21]

The costs per household for buying bottled water or replacing cartridges for the water filters is about 10,000 rubles per month on average.

Not surprisingly, 17 respondents of the 20 are not satisfied with the quality of the tap water: in their opinion the water is hard, unclear and turbid, smells and tastes unpleasant and is strongly chlorinated. Washing machines and sanitary devices corrode quickly. And even when using filtered water, water boilers get quickly scaled. Resource persons recommend not using the “crude” water for even cooking. 18 respondents are willing to pay an increased tariff for water if the water quality is improved: half is willing to pay 10,000 rubles per month extra, the other up to 20,000 rubles/m. It was said that Vodakanal plans to connect the whole Minsk city water supply system to artesian springs.

All flats have water flushed toilets and are connected to a central gravity sewage system. 19 of the 20 respondents are satisfied with this situation; one is not really satisfied as their toilet happens to be blocked.

3.4 Solid waste

There is a special “refuse chute” for disposing solid waste at each of the five entries of the apartment block and all respondents use this for disposing their waste. This waste is collected by the municipal

[21] Stationary filters are devices which are fixed to the tap; jar filters are separate and need to be filled up each time. Both filters need changing of cartridges from time to time.

services and brought to a waste dump. The dwellers pay 1700 rubles per month for waste collection. There is no waste separation, except that plastic waste can be deposited in special containers outside the building (of OAO Belecosystema, a private company). All respondents do realize the need for (more) separate waste collection. Some respondents are willing to pay for this, whereas others think that they should get money for separating waste.

3.5 Health issues

In three-quarters of the surveyed households one or several household members suffered some disease or illness in the year prior to the survey. Most common health problems (in order of occurrence) were gastrointestinal diseases, orthodontic problems, cardiovascular diseases, contagious intoxication, catarrhal diseases and allergies. All respondents, except one, think that their health is affected by the environment (pollution, water quality, etc.). Half of the respondents think that the radiation level is increased, mainly because of the Chernobyl accident. They try to take counter-acting measures such as the consumption of wholesome food items, vitamins and/or food with a high iodine concentration.

Among the interviewed key persons were also medical workers. In their view the most frequent health problems among populations such as the dwellers of the Burdeinogo apartment block are broncho-pulmonary and gastrointestinal diseases. In addition, cholelithiasis and urolithiasis (gall or kidney / renal stones) are reported to be common. These resource persons consider that the strong water chlorination contributes to an increase in the number of cases of asthma, allergy and skin diseases. The bad water quality is said also to account to musculoskeletal diseases such as arthrosis or osteoarthrosis. They also mentioned that bad ecological conditions cause ganglions, a pre-stage of oncological diseases.

These medical workers observed that it used to be normal that mainly middle-aged and elderly people came to them for medical advice. More recently, however, the proportion of younger people seeking advice seems to increase. In their opinion, the deteriorating environment is one of the reasons for this. Especially in certain cases of diseases among children, they think that the consumption of water directly from the tap (i.e. not boiled or properly filtered) may be a cause (or one of the causes) of disease, especially if the tap water has a high concentration of micro-organisms. They also question the hygiene level of flat dwellers, reasoning that "*he who drinks tap water sees no need to scald dishes, vegetables, fruit, etc rinsed by running water*".

These key persons have the opinion that the following measures should be taken in order to improve the water quality: filter installation, ionization by argentums, and mineralization, the latter because chrome, selenium and iodine are said to be lacking in the water.

3.6 Gender Issues and Community Activities

In about half of the surveyed households, the woman is the main responsible for tasks such as cleaning, laundry, cooking and child care; in the other households men also take such responsibilities. In all households men help with child care and cleaning. Often men also help with cooking and laundry. Men are also involved in repair work and shopping, in particular of food.

Only two of the 20 respondents are formally involved in a community activity: both are members of parent committees at the school of their children. All respondents participate in general meetings of the condominium which are usually held once a year to address matters of common interest of the dwellers. This condominium is a formal non-profit organisation for the administration of the immovable property (i.e. the apartment block), with the maintenance of the apartment block as its main aim. There is a board elected by all dwellers and all dwellers pay a monthly fee.

On the question to whom the respondent would turn for support in case of any problem, two-thirds of the respondents answered finding it difficult to identify someone they can ask for help. The other third of respondents could approach parents or other relations, neighbours or friends. This is quite a different outcome than in the rural communities where all respondents (except some in the more urbanized Smilovichi) could identify someone they could approach for support.

3.7 Needs and Priorities

The respondents of the Burdeinogo apartment block were also asked about the main problems of their own family and about the main ecological problems. When answering the question about the more personal problems, they limited themselves already to environment related topics as can be seen in the following answers:

- the large energy consumption due to the absence of energy-saving light bulbs in the house (10 respondents);
- the water quality (9); and
- the absence of a proper sound insulation in the flat (1).

As main ecological problems were mentioned by 18 of the 20 respondents:

- poor water quality (9)
- air pollution because of the large number of cars around the apartment block (7) and
- no ecological problem (2).

Both male and female respondents were concerned about the water quality, whereas energy saving was a concern more expressed by men than by women.

If the respondents would get any additional money, they would spend it as follows:

- improving the ecological situation (4 respondents)
- installing energy saving light bulbs (3)
- travelling and/or entertainment (3)
- improving their housing conditions (2)
- education of the children (2)
- a new car (2)
- cultivation of their dacha land (2)
- replacement of their windows by insulated glazing units (1) and
- a computer (1).

The main measure that the respondents identified for improving the health situation of themselves and their children is *"solving the ecological problem".* Two respondents said that additional income would be the main factor to improve their and their children's health.

From this chapter it can be concluded that a the large majority of the Burdeinogo respondents as well as key informants consider the quality of the tap water as an important problem. It appears imperative to get proper information on the water quality through laboratory testing of water samples. A second issue, energy saving, has also the interest of –at least part of- the respondents, and it appears proper to assess the options for this.

4 GARDENING SOCIETY "VERASOK"[22]

4.1 General Information

The Gardening Society Verasok is a dacha complex located at several km from Zasulsk Village in the Stolbtsy District and is at about 60 km south of Minsk located in a forest area. It is said that people like to have their dacha at –at least- this distance from Minsk, as the influence from the city (especially pollution) is said not to reach further than 60 km.

Since the 1970s dacha complexes were established in Belarus –as in the rest of the Soviet Union- to allow the production of own food, also by city dwellers. The land in the Verasok dacha cooperative was issued in 1988 for summer house construction and cultivation to the employees of the State Association "Rembyttechnica" (Minsk Repair Organizations Trust). At that time new construction materials for houses were hardly available and families attempted to construct houses with whatever material they could get.

At Verasok the size of a plot is 6 sotok or 600 m^2 per owner. There are presently 111 members of the cooperative, corresponding with 106 households. The majority of these people are pensioners (couples or single), but also some families with young or growing-up children (mostly 1 – 3 children per family) have their dacha here. All dacha owners are from Minsk. Incomes of respondents are reported as 270,000 rubles/month for a pensioner (about 88 euro) and 500,000 to 900,000 rubles for a working person (165 – 300 euro). In the warm season the respondents spend almost all weekends at their dacha as well as the summer holiday, but in the winter they do not come. Exceptions are the two or three families (all pensioners) who remain to live here in the winter. More than half of the dacha owners have a car nowadays; the others either come by train or by minibus.

The Verasok Gardening Society has an elected board with a chairman, deputy, secretary and treasurer. Meetings are normally held two times per summer to discuss important issues (such as investments) for which all members are invited. Additional meetings are held if an urgent decision has to be made.

The reasons for using the dacha are:

- Staying in fresh air (also due to the pine wood);
- Growing own food;
- Having the opportunity to collect forest products (especially mushrooms and berries);
- Pursuing own hobbies such as growing flowers or vegetables;
- Alternative for a summer camp for children: they can thus spend the whole summer in the open and clean air; and
- Social reasons: easy communication with other dacha owners (especially for pensioners).

The baseline survey was conducted among 10 respondents. The survey report prepared by the initiative group presented the arithmetic mean values of (quantitative) answers or the most common answers in case of more qualitative questions (i.e. no ranges are provided).

4.2 Agricultural Production

All plots of the dacha cooperative cover 600 m^2 including the house. On average, about 400 m^2 is used for gardening. In the past all dacha owners cultivated food crops to complement their daily diet, in particular vegetables and fruits. Nowadays mainly pensioners still continue to cultivate all the land around their dacha with vegetables, potatoes and fruits, because (1) they have sufficient time for cultivation and (2) given the relatively low pensions, they can still well use the (nearly) free vegetables and fruits. Thus pensioners here spend less on food than if they would have to buy everything in the market.

In contrast, many dacha owners of the younger generation do not use (all) the homestead land to grow vegetables and fruits, but prefer to have a decorative or easy-to-maintain garden. For some of

[22] The information of the section is based on the information gathered by the baseline survey in summer 2007 and on a visit to this gardening complex in May 2007.

them, the memory of the constant gardening duty in the past ("*all weekends and holidays were spent on gardening work*") is one reason not to cultivate vegetables; the better availability (and affordability) of vegetables in the market is another important reason.

All respondents grow some vegetables, flowers, berries and/or fruits (apples, pears, plums) in their garden. On average, about half of the homestead is used for vegetables. Almost all respondents buy some manure for the garden as well as some fertilizer (especially nitrogen), the latter especially for vegetables and flowers. The respondents who grow potatoes usually apply "Karate" two to three times per season against the Potato Colorado Beetle; some collect the beetles by hand. All agricultural produce is used for own consumption; fruits also for preservation.

It is not common that dacha dwellers hold animals, since they cannot look after them when they are not present. Only at some homesteads a few chicken are held (in summer) for eggs.

4.3 Housing and Energy

Since the summer houses are constructed by the owners themselves, there is a large variety in design and materials used. The average size of a house is 6 by 8 m; with an average height of 2.7 m and two floors, the average volume is about 260 m^3. In general, the second floor is an attic, but these meters are also considered. Walls are between 30 and 50 cm thick and made of wood or silicate blocks. For the roofs, roofing slate is used (usually made from asbestos) and floors are made of wood. It is quite common to find some kind of insulation material, such as glass wool, plastic foam, sawdust, moss or flax. Windows are of "normal" size, some have single glass[23], others double.

The overall condition of the summer houses varies greatly: some are in a very poor condition, whereas others are good to even excellent, where owners made their dachas into little "castles". There are also houses that have never been properly finished; some of these therefore are draughty.

All summer houses have a connection to the electricity grid. A normal consumption is 25,000 kWh per month in summer and only 1,000 kWh per month in winter for the entire dacha cooperative. The far lower electricity use in winter can be explained by the fact that the dachas are really "summer houses" and are not used in the winter. At present only a few pensioners use their dacha as their permanent dwelling, and stay both summer and winter. At the time of the survey (summer 2007) the respondents were paying 130 rubles per kWh.

Although the dachas are mostly unused in winter, they have (some) heating facilities: either using fuel wood or an electrical heating device. Fuel wood is bought at neighbouring collective farms. Cooking is mostly done on electric cookers or by using bottled gas. It is estimated that a family of five persons staying here in summer weekends and holidays spend about 300,000 rubles per year on energy (electricity, heating and cooking).

4.4 Water Supply and Sanitation

Water is supplied from a bore hole (deep well) of 120 m deep, which serves both the Verasok cooperative as well as another gardening society, with in total about 260 houses. From the water tower the water is supplied through an underground pipe system to the houses. There is a large variation in the actual facilities within each house (number of taps, bathroom, shower, etc.) and it is not common that summer houses have a proper bathroom. Some have a summer shower, a Russian sauna or a boiler. A few families have a washing machine in their summer house. There are no individual water meters, but all costs for the water system are shared by the dacha owners. Normally 20,000 rubles are paid per three months per dacha, four times per year, so also in the winter season. This is paid to the treasurer of the dacha owners' society. There are no regulations by the society on the use of water from the deep well. Families can use as much as they want and for any purpose.

The water quality has been analysed at the time the original well was drilled, after which the Sanitary Station (SES) had issued a permit. It is not clear if at present the water quality is still sometimes checked. All respondents said to be satisfied with the water quality. All respondents drink the water from the tap without boiling or filtering.

[23] Most summer houses are not build to be used during the cold winter season

The system supplying the water from 120 m deep is not functioning in winter when temperatures drop below zero. There are hand pumps in the streets, shallow wells which supply water from 6, 10 or maximum 20 m deep, which are used for watering gardens and other technical water (i.e. not for consumption). In winter the shallow wells are used for drinking water by the few persons who stay year round or visit their dacha in winter. There is no information on the quality of the water from these wells. Respondents also collect rain water for the purpose of watering the gardens.

There is no central sewage system. Waste water is normally disposed "into the ground" somewhere around the house. Most dachas have outside toilets, mainly in the form of a bucket in a wooden toilet house. Some have an (outdoor) pit latrine; a few houses have indoor flush toilets. The latter have own septic pits ("sanitary wells") made of concrete and/or brick, but with a gravel bottom, allowing the infiltration of liquids into the deeper soil. The sewage from buckets (and pits, when necessary) is normally emptied by the dacha owners themselves and buried at the homestead. People were somewhat embarrassed to discuss the details of this subject.

All respondents were satisfied with the water supply system. In May 2007 there was a problem with the deep well, which has been solved by the society since then. It was also expressed that regular (e.g. annual) control of the water quality would be desirable. The respondents are not happy with the sanitation situation "*as there are problems with purification".* It is understood that especially the disposal of the excrements (burying on their own homestead) is seen as very unsatisfactory.

4.5 Solid Waste

There is no solid waste collection system within the Verasok cooperative. There are various ways families deal with the solid waste. Some families put kitchen and garden waste into a compost pit for soil composting; other households burn their garden waste (and paper). Other solid waste is mostly accumulated in pits and then burned or deposited at illegal dump sites. Some people apparently take certain solid waste (especially plastics) back home to the city to dispose it properly. All respondents are aware that burning plastics is affecting people's health; there is no information that plastic is burnt in stoves inside the houses.

One informant, for whom the absence of a solid waste collection system was the main problem, told that in another dacha cooperative all dacha owners contribute some money to pay for regular collection of solid waste. She would like to see a similar system for Verasok as well, but thinks that especially the pensioned dacha owners do not have enough money for this. All the surveyed respondents, however, said to be interested in having a proper waste collection system and are also willing to pay some money for this.

4.6 Health and hygiene

Most of the dacha owners live in Minsk and probably will visit a medical health centre in this city in case of health problems. If urgent health problems occur during a stay in the dacha, people can go to the medical health care centre at Kolosovo Station at 3 km.

Respondents informed that there are "many health problems" among the pensioners staying at the dacha complex; however, they did not specify the nature of these. They are aware that air, water and soil must be clean, as otherwise one's health is affected.

Food items that are daily consumed are bread and porridges or pasta. Potatoes, dairy products and meat are consumed a few times per week, whereas fresh vegetables and fruits are eaten when it is the right season. Preserved vegetables and fruits are common and those are consumed also in other parts of the year. The respondents consume eggs only sometimes.

The absence of bathrooms and showers, and toilets with washing basins may somewhat affect the hygiene situation, but it should be kept in mind that most families only come here for weekends and holidays during the summer. As mentioned before, "summer showers" (outdoor showers) are quite common, but it was commented that during the rainy season problems with the water quality of these summer showers occur.

4.7 Gender issues and community activities

According to the respondents of this dacha complex, there is normally a task division among men and women. Women cook, do the laundry and do the weeding; men do construction work, dig the soil, but do also engage in minor household tasks. Children normally help their parents. Watering vegetables is a task that is not gender specific: both men and women do.

There is one community organisation at the dacha complex, which is the dacha or gardening society itself, of which all dacha owners are members. Through this society all the essential common issues are arranged, such as the water supply. For example, all members / dacha owners pay their contribution for the common water supply system to the treasurer of the Board of the Society.

4.8 Needs and Priorities

The main personal problems of the majority of the respondents are health related. They think they can improve their health by changing their lifestyle and nutrition habits. As main environmental problems within their dacha complex, they see the absence of a proper solid waste collection system and the absence of a sewage system or proper system to dispose the human excreta.

In case they would get any additional money, they would spend as follows:

- for general improvement of their living conditions;
- to improve the external look of their houses;
- on a solution for the garbage problem; and/or
- on the introduction of new methods of sewage sanitation.

5 FINDINGS SCHOOLS

5.1 General information

This chapter provides information on 11 "school communities": 8 proper schools, 2 children's clubs and one children's Centre consisting of a sanatorium and school facilities. In table 8 these institutions are presented.

Table 8: Overview of the schools, clubs and centre that submitted a baseline survey report

Nr.	Name	Type of establishment	Location
1	Surovenskaya State General Basic Education School	Basic School	Surovni village, Shumilino Region, Vitebsk Oblast, 280 km from Minsk
2	Lepel State Secondary General Education School No.1	Secondary School with advanced study of foreign languages	Sovetskaya street, Lepel, Vitebsk oblast (150 km from Minsk)
3	Lepel State General Education Gymnasium No. 1	Gymnasium	Lepel, Vitebsk Region, 150 km from Minsk
4	Gorodok State Secondary General Education School No.1	Secondary Education (two shifts)	Gorodok, Vitebsk Oblast, 400 km from Minsk
5	Gorodok State Secondary General Education School No.2	Secondary School	Gorodok, Vitebsk Oblast, 400 km from Minsk
6	Novopotsk State Secondary General Education School No. 12	Secondary School	Novopotsk, Vitebsk Region, 280 km from Minsk
7	Minsk Ecological Gymnasium No. 19	Gymnasium with special attention to science	Minsk
8	School No. 145 in Minsk	Secondary general education school with musical bias	Minsk
9	Lepel Intellectual Club "RA"	Centre of Children Arts	Lepel, Vitebsk oblast (150 km from Minsk)
10	Shumilinsky State Regional Centre of Out-of-School Work	Out-of-School Clubs (before: "House of Pioneers")	Shumilino, Vitebsky Oblast 270 km from Minsk
11	Children Rehabilitation and Health Improvement Centre "Nadezhda" (for children affected by Chernobyl)	Belarusian-German joint charitable organisation	Vilejka , Minsk Oblast (60 km from Minsk); Located in the water protection zone of Vileyskaya water system.

The Surovenskaya school is the only "basic school" involved in this survey, i.e. a school with grades from 1 to 10, corresponding to children from 6 till 16 years old. All other schools are "secondary schools" with grades from 1 to 12 (age 6 to 18); thus secondary schools in Belarus also include primary education. Gymnasiums are special secondary schools offering specialisations in certain subjects, usually from grade 5 onwards. To enter a gymnasium, children have to pass an exam after 4th grade.

Almost all the schools and clubs of this survey have a special interest in ecology as they either offer (optional) ecology courses and/or have ecology clubs that pupils can chose to join. The Minsk Ecological Gymnasium has an overall focus on ecology: all students follow special science and ecology lessons and the school is managed in an environmental friendly manner. The Gorodok No. 2 School is also an example of a school actively involved in ecological activities. In 2006 they planted 450 trees (including 50 fruit trees) and prepared flower beds on their school ground; they participated actively in the state level action "My Flowering Land", the action "Pure Water Spring" and the annual regional Eco-theatre festival; and they organized a volunteer ecological group "Earth dwellers". The Lepel Club is engaged in environmental activities such as testing children on their environmental awareness. The Children's Rehabilitation and Health Improvement Centre "Nadezhda", established in 1994 for children affected by Chernobyl, tries to apply an environmentally friendly approach in many of its activities (e.g. ecological agriculture and separate waste collection).

Surovenskaya is a village school with 39 pupils at the time of the survey. The other schools are located in towns or cities and have between 563 and 880 pupils. The two after-school clubs are each

attended by about 500 to 600 children for all club activities. The Nadezhda Centre receives 270 children per shift of 24 days; in summer they have 400 children per shift. The number of teachers and other staff (technical and administrative) appears around 100 for the secondary schools (but no data available for all); the clubs have less staff, but the Nadezhda Centre more (160 specialists).

Annex 1 provides tables with detailed information per institution and per subject. In the following sections of this chapter the information on the 11 institutions is presented in a more general and summarized way.

5.2 Gardening

All 8 schools have land or a school yard; one club is surrounded by a garden. The Nadezhda Centre has 40 ha for agriculture and a forest area, located in the water protection zone of the Vileyskaya water system.

3 of the 11 institutions grow vegetables which are used for the (school) meals. The Surovenskaya school has also greenhouses; the Nadezhda Centre grows grain crops next to vegetables. Two schools and the Nadezhda Centre have fruit trees.

All gardens or school yards have trees and/or bushes; the majority also have flowerbeds. Pupils of the 8 schools are involved in maintaining the garden, together with (biology) teachers and technical staff. In one school these pupils are the members of a “flower growing” hobby group”. In another school the ecological club (in which also (grand) parents participate) designed and maintained the garden. The tasks done by pupils vary from one school to the other and may include digging, planting, watering, weeding and/or gathering dead leaves. Some of the schools have made special gardens, such as a “bionece” and a folkloric village nook (Novopotsk School No. 12) or ponds and alpine hills (Minsk Ecological Gymnasium). In the Nadezhda Centre the role of the children in gardening and agriculture is limited to collecting dead leaves, garbage and –in winter- snow. The adults of this Centre participate twice a year at “*subbotniks*” (working a Saturday for free). The two (after-school) clubs are not involved in any garden maintenance.

Three schools and the Nadezhda Centre compost garden waste, apparently to fertilize their gardens. Some schools use synthetic fertilizer in their gardens; one survey report explicitly informed that their pupils are not involved in fertilizer application. At the Nadezhda Centre all agricultural production is based on ecological principles. No institutions apply pesticides or insecticides for agricultural purposes. The survey report on the Surovenskaya village school informed that during the summer holidays (in August) “diclophose” is applied inside the buildings to control fruit flies.

Next to the use of vegetables, fruits, greenery and/or herbs for school meals, various schools use garden products in other ways: for herbariums, research, artistic and/or science classes. At two institutions herbs are collected from the school ground to prepare so-called “fito-teas”. Although not always explicitly mentioned, the gardens and school grounds also have a recreational value. In case of Novopotsk School No. 12 the school ground even has become a recreational zone for inhabitants of the area.

5.3 Housing and energy use

The buildings of the 8 schools are between 20 and 70 years old, mainly made of brick, and mostly with double glass windows. Two are in need of major repairs: roof, floors and window frames. The others need relatively smaller repairs or replacements, with especially the window frames in an unsatisfactorily state (either letting heat out, or not allowing the windows to be opened). In several schools the lighting of classrooms needs to be repaired or improved. The two clubs are both in old buildings which apparently are in an unsatisfactorily state, with insufficient and outdated lighting also as a problem. Only the buildings of the Nadezhda Centre are in all aspects in a satisfactory state.

All buildings have a central heating system; the Nadezhda Centre has its own boiler. Only in this Centre and in the Surovenskaya school the interviewed pupils were satisfied with the temperatures in the school in winter. In four schools some pupils had the opinion that it is too cold in the classrooms in winter, whereas in three schools and both clubs (almost) all respondents, and even the key persons, thought it is too cold in winter, with temperatures sometimes dropping to around or below 10 ºC. In a

few schools the classroom temperatures are too high in summer, especially in classrooms where the windows are exposed to the sun.

A number of schools reported their energy consumption in kWh. The variation in energy consumption per school seems considerable. The Novopotsk School provided apparent accurate data. Their average electricity use is 16,584 kWh per month for the 2006-07 school year, which the school key persons considered very high. The Lepel Gymnasium reported an average of 1,648 kWh per month over the period January – August 2007. One school indicated that the electricity costs are 259 rubles per kWh.

Except one school, no information has been provided on energy use for heating. School 145 in Minsk uses between 43 and 128 gigacalories of thermal energy per month. The Nadezhda Centre implemented between 2002 and 2005 a programme on rational energy use, which included the use of energy saving bulbs, reconstruction of the boiler room (from liquid oil to firewood) and the installation of a solar collector to heat water for the canteen.

The average number of children is between 16 and 29 per classroom. Surovenskaya School again is an exception with 4-7 pupils per classroom, whereas also in the school of the Nadezhda Centre the number of children per classroom is below average (12-20). All interviewed pupils think that the space in their classrooms is sufficient. In the clubs the group size varies between 8 and 16 children.

The lighting in the classrooms (i.e. when it gets too dark outside) is seen as a problem by almost all pupils of 4 institutions (including in both clubs) and a number of pupils in 3 schools. The major problem is that lamps are old and outdated and that some are flickering or not working anymore. For the Lepel Secondary School it was reported that 144 to 318 lux is supplied instead of the required 400 lux. Three schools (recently) replaced all lamps with new ones and the Nadezhda Centre also has adequate lighting, but for the 7 other institutions the lack of funding is the main constraint to do this.

Noise is not conceived as a major problem, although the pupils of 8 institutions reported some hindrance because of noise, mostly caused by traffic, grass mowers, noisy pupils and/or noisy lamps.

When the interviewed pupils were asked about the problems they perceive related to their school or club building, the following answers were given:

- Broken or rotten window frames
- Too low temperatures in winter
- Not enough light as lamps are out of order or have insufficient capacity
- Bad ventilation and/or
- School too close to the highway.

Only the interviewed pupils of the Nadezhda Centre did not report any problems related to their buildings.

Many pupils reported that they try to save energy in school by switching off lamps in classrooms that are not used, by closing doors or by warming windows[24] in autumn and winter. They also report to switch off taps when water is running idly. Some schools have one pupil per class who is responsible for energy saving.

5.4 Drinking water supply

All schools and clubs are connected to a central water supply system, except for the Nadezhda Centre, where two artesian wells are the water source. Only the Lepel Gymnasium collects rain water, which is used to water flowerbeds. Several schools have water meters installed which are also working; in one school the water meters are under repair, whereas several other schools do not have meters. In the absence of water meters schools pay for water on the basis of an assumed consumption. For example, in the Surovenskaya baseline survey reports that 10 l/day/pupil and 12 l/day/adult are assumed, whereas the Lepel Gymnasium reports to use 85 to 97 m3 per month at a cost of 1898 rubles per m3. The Novopotsk School pays 1578 rubles per m3 for cold water and 72,750 rubles per gigacalory for hot water.

[24] "Warming windows" is putting bands of foam-rubber in grooves and glueing paper bands on top, thus preventing draughts through window chinks.

All schools and clubs have reasonable to good facilities for hand washing; the numbers of taps seem sufficient. Toilets are water flushed (see also section 5.5). Only the Minsk Ecological Gymnasium and the Nadezhda Centre have properly working showers, for example, to be used after Physical Education lessons. One school has a shower but without hot water; in another school the shower is only meant for canteen staff, and in a third one the shower is out-of-order. Four schools do not have showers.

In none of the institutions the tap water is seen as a proper source for drinking water - although some pupils do drink tap water, see below. The Surovenskaya village school uses tap water only for technical purposes and the water for drinking is fetched from two wells in the village. The Minsk Ecological Gymnasium offers "free" bottled water for drinking in every classroom (the parents pay for this); in most of the other schools bottled or mineral water can be bought at the buffet.

All key persons of the 11 institutions were dissatisfied with the quality of the tap water. They consider the water as "unsuitable" for drinking with a too high iron level, too many hardness salts and/or with an unpleasant taste. The pupils of the Surovenskaya School are satisfied with the water they drink, which has a good taste; no information was available about nitrate content or other characteristics of this water[25].

In several institutions some interviewed pupils indeed drink tap water; in others tap water is hardly consumed. Instead pupils:

- Buy bottled water at the buffet
- Drink boiled tap water supplied in the canteen
- Drink free bottled water (only in the Ecological Gymnasium) or well water (only in Surovni) or
- Do not drink water at all at school (but may buy soft drinks or tea at the buffet).

In some schools a few pupils were satisfied with the quality of the tap water, but the majority was not (lot of iron, the water smells, unpleasant taste). When the pupils were asked what improvements they could suggest for the drinking water situation, the most common answers were: installation of filters and provision of bottled or mineral water for free.

5.5 Sanitation

All schools and clubs have indoor water flush toilets, except the Surovenskaya village school which has two outdoor toilets. These toilets in Surovni are said to be in a satisfactory state and the "septic reservoirs" are emptied by school staff when necessary.

All institutions with water flush toilets are connected to a central sewerage system, except the Nadezhda Centre. This Centre has its own treatment facilities: a "biological station with pneumatic aeration and stabilization of active silt".

The overall sanitation situation appears satisfactory at only two schools and the Nadezhda Centre. Key persons of six schools informed that repairs or improvements of their toilets are needed, such as the replacement of lavatory pans, repairs of flushing tanks and/or construction of separate cabins. In case of the Minsk Ecological Gymnasium, upgrading of the toilet blocks is ongoing but cannot be completed as funds are not sufficient.

In most of the schools there are no toilets for girls with separate cabins in place, which is especially felt as a problem for girls during their menstruation. Key persons of three schools explicitly informed that girls sometimes miss lessons because of their menstruation in combination with absence of proper facilities (especially toilets with cabins). At two schools girls were allowed to use either the teachers' toilets or first floor toilets (apparently with separate cabins); however, not all girls at these schools were satisfied with the situation. Overall, the absence of proper sanitary conveniences for girls was recognized as a problem.

[25] It is quite common in Belarus that the nitrate content of water of shallow wells is exceeds the standards.

Due to the relatively limited time children spend at the clubs, the need for good toilets is here somewhat less urgent, although the situation regarding toilets also in these clubs is not considered optimal.

Although the interviewed key persons of the schools were mostly dissatisfied, a (small) majority of all interviewed pupils answered to be satisfied with the general state of the toilets; a minority said to avoid the use of toilets because of several reasons:

- No separate locked cabins or locks out of order;
- Too many people in the corridor, a too long queue or toilets always occupied or
- Toilets dirty, smelling or no toilet paper.

Pupils suggested the following improvements for their sanitation,:

- Make separate cabins, install doors and/or ensure that the locks are working;
- Replace lavatory pans, repair the toilets
- Ensure that toilet paper is always available; provide mirrors, hand dryers; and
- Make a separate toilet for girls (as in one of the clubs there is one toilet only for all).

Most interviewed pupils were satisfied about the cleanliness of the toilets.

The interviewed girls of 9 of the 11 institutions were not (or not fully) satisfied with the toilet situation, especially when keeping in mind their menstruation. Here the main suggestion was to make separate cabins with doors that can be locked. Other suggestions included: provide hot water, ensure availability of sanitary towels in case of need, or the installation of bidets.

5.6 Solid waste disposal

All schools and clubs have garbage bins in classrooms, other rooms, toilet blocks and/or corridors. These are usually emptied into larger containers kept outside. This waste is normally collected by the communal services which deposit it with the other solid waste, e.g. at the municipal dump site. Only in Surovni the waste is not collected; instead it is burnt on the school grounds.

At nine of the eleven institutions some waste is separated. In case of four, waste paper is separately collected and disposed at special points for recycling. Some schools also separate kitchen waste and/or food remains: this is either composted or sold (apparently as animal feed). Waste separation gets explicit attention at two institutions. At the Minsk Ecological Gymnasium paper, plastic and food remains are separated from the rest. The Nadezhda Centre is implementing a program on separate waste collection separating paper, plastic and dead leaves; they do not have separate collection of glass yet, as there are still problems regarding its recycling.

Except for the Surovenskaya village school, no institutions burn garden waste. Instead, it is either composted or deposited in the same containers as the other solid waste. School 145 in Minsk occasionally burns their regular solid waste during the summer because the waste collection is not properly organised.

A large majority of the interviewed pupils is aware that burning waste is harmful to someone's health. In their opinion, burning waste can affect health because it pollutes the air, it produces harmful substances and CO_2, smoke affects the lungs and provokes coughs, it has an objectionable odour and because it affects the ozone layer.

5.7 Health issues

Key persons were asked about the main health problems of the pupils in their school or club. Most often mentioned were respiratory diseases, poor eyesight and spine curvatures. At the Lepel Secondary School No. 1 the fact that the same size of furniture is available for pupils of all age groups was seen as a main reason for the latter problem. Several key persons also mentioned endocrine or thyroid problems, cardiovascular (or heart and vessel) diseases and/or digestive disorders or stomach-ache. In the Gorodok No. 2 School the number of cases of blood disorder has lately increased. When discussing the sanitary facilities for girls, various key persons informed that girls are sometimes absent during their menstruation in apparent combination with absence of proper toilet facilities (lack of privacy).

The pupils' survey demonstrated that most pupils are 1-2 times per year absent from school due to illness. One-fifth to one-third misses school 1-2 times per term, whereas a small proportion of the interviewed pupils misses school even 1-2 times per month. In their own view their main health problems are respiratory diseases, including colds and flue, and poor eyesight. Also spine curvatures are stated as a health problem. Less mentioned are stomach-ache, headache and cardiovascular diseases.

Key persons of half of the schools have the opinion that the quality of the tap water would affect the health of the pupils. Also the pupils themselves think that bad water quality and/or bad environment is affecting their health.

Although smoking may be prohibited –or at least discouraged- at all schools, it can not always be entirely stopped. Key persons of some schools informed that there are pupils who smoke outside the school premises; at a few schools pupils smoke in a certain (designated) corner of the school yard or occasionally inside the building ("in the toilets"). One key person told that -with the help of the Ecology Club- they tried to fight smoking at school, which, however, "*is not an easy task*".

The pupils were asked about certain habits of their classmates. A majority of the responding pupils of most schools informed that some classmates are smoking. In some schools pupils thought that some classmates drink alcohol. Regarding drugs, however, nearly all pupils were either convinced that there is no drug use among their classmates or they do not know.

The interviewed key persons mentioned as the following priorities for improving the health of their pupils (as answer to an open question):

- Promote a healthy lifestyle, including more sports and more outdoor activities (and less TV and computer) (mentioned in 6 of the 11 reports);
- Well-balanced, more nutritious (school) meals (4);
- Avoid overwork of pupils due to high work load, reduce workload to prevent nervous breakdowns and/or promote good daily schedules for the pupils (3);
- Repairs to the building, especially the windows, to promote better heated classrooms (3);
- Improved lighting in the classrooms (3);
- Improved quality of the drinking water or free access to good water (2); and
- More greenery / plants inside the school and/or around the building (2).

Suggestions that were made in only one report (of the 11) included the provision of furniture better adapted to the age of the pupils, the reconstruction of toilets, the construction of showers and the establishment of a fito-bar (for serving herbal tea) at school.

All eight schools provide school meals which are prepared at the school canteen. Only at Novopotsk School part of the meals are catered. The Lepel Secondary school provides hot breakfasts and lunches. The Lepel Gymnasium reports that pupils of form 1 to 4 get free meals paid by the state (@ 1540 rubles per pupil per day), whereas the older pupils get school meals at their parents" expenses. Also here breakfast and lunch are provided. Not all children make use of the school meals, for example, the Novopotsk School reports that 76% of the pupils have a hot lunch daily. At 5 of the 8 schools some pupils bring food from home to school, such as fruits, cookies, juice, sandwiches or sweets. This is either in addition to the school meals, or instead of the school meals.

Several schools reported about the kind of food served. Main dishes often contain porridges, meat, fish, potatoes, vegetables and/or cottage cheese. At 2 of the 8 schools the vegetables are (at least partly) produced by the school. Some schools serve salads daily; at others (at least at the Novopotsk School) salads have to be bought at the buffet.

All schools except the Surovenskaya village school have also a "buffet", i.e. a counter where pupils can buy drinks and foot items. The choice of food items available at the buffets vary from school to school, and appears more "healthy" at some schools compared to others. For example, the Novopotsk School does not sell sweetened soft drinks or chips; instead their buffet offers tea, juice, fruits and salads (but also pastries). The interviewed pupils said to buy the following drinks and food items from their schools' buffets: tea, mineral water, juices, rolls, pastry, fruits, cheese, yogurts, dried fruits and/or pizzas.

The clubs, obviously, do not supply any meals. The Smumilinsky Club appears to provide herbal tea.

At the Nadezhda Centre all children stay at a boarding basis and therefore have all their meals at the Centre. The Centre produces part of its meal ingredients (grains, vegetables) at its own land through organic agriculture. All interviewed children liked the meals at the centre ("many vegetables", "tasty", "well-balanced"); some of the interviewed adults (staff members), however, considered the portions too big or the meals too rich (in calories). Here the children buy ice-creams, sweets and chocolate at the buffet as well as mineral water.

5.8 Main problems and priorities

The interviewed pupils were asked about their main problems at their school or club. Most of the answers received on this question were of a more general nature, but some were related to environmental issues:

- Too much homework and/or (too) big volume of studies (mentioned at 4 schools);
- Furniture not adapted to the age of the pupils, uncomfortable furniture, don't like desks (3);
- Insufficient eyesight, insufficient lighting, old lamps (3);
- Bad relations with the teachers and/or with classmates (3);
- Not happy with the compulsory school uniforms (2) or with the school meals (2);
- Problems with the study or do not like the study (2).

The issues of too cold classrooms and unsatisfactory state of toilets were each mentioned at one school. The pupils of the Surovenskaya village school perceived the lack of computers and TV-sets as their main problem.

A next question asked specifically on the pupils to mention the most urgent environmental problems within their school or club. Here the most frequently mentioned problems were: drinking water and its (bad) quality, the toilet situation, the insufficient lighting in the classrooms and the (too) low temperatures in the classrooms in winter. Mentioned only at one school were the following problems: the nearby highway, the smoking of other pupils and the fact that some other pupils do not stick to the separate waste collection as introduced in the concerned school.

Based on the interviews with the key persons and the analysis of the response from the pupils' questionnaire, the main problems per institute were deducted and summarized. Other needs identified by the institutions are also added. These are presented in table 14 of Annex 1.

Possible solutions

In almost all survey reports suggestions for solving environmental and health problems were mentioned by the interviewed key persons or could be deducted from the problem descriptions. Table 14 of Annex 1 also provides the overview of such suggestions and measures which mostly address the problems listed in the above table.

The suggestions for improvements in most of the baseline survey reports seem not meant as concrete options for a pilot projects under the Matra Project, but rather address the (urgent) needs felt by the school. But when pilot project are formulated, they are likely to address at least one of the identified problems.

The baseline surveys were intended to get insight in the environment-related problems and their context and did not yet contain explicit questions on concrete ideas for pilot projects. Some of the baseline survey reports, however, already presented first ideas or priorities for a focused pilot project. In particularly the following institutions mentioned:

- The Surovenskaya School proposes special ecology classes through the creation of an educational programme on water and energy (resources and consumption). They mention also the need for a library and simple equipment for water analysis, etc.
- The Gorodok School No. 2 highlights the replacement of 840 lamps as their main priority; and
- The Nadezhda Centre intends to do further work on their waste disposal project, including expanding the positive experience to neighbouring villages and in the places of residence of the children.

5.9 Summary and conclusions regarding the schools and clubs

Summarizing the problems and the suggestions for improvements, the following conclusions can be drawn:

- In most institutions the tap water is not considered suitable for drinking. The most common alternative for pupils is buying bottled water, tea or another drink at the school buffet; some institutions provide “free” alternatives as boiled water, free bottled water or herbal tea. Providing free access for all pupils to safe drinking water, however, should be aimed at by all institutions.
- In a majority of the institutions the old toilet facilities need to be replaced by modern ones. Girls are mostly dissatisfied with the existing facilities, especially whenever they have their menstruation. To address the latter, toilets with separate cabins that can be locked are highly desired.
- In many institutions the classroom temperatures in winter are (too) low. The main reason is the unsatisfactory state of the (old) window frames (or windows) with chinks allowing draught. The pupils usually do “window warming” (putting foam in the grooves and/or covering them with paper), but this does not sufficiently solve the problem also because the capacity of the heating system is neither very adequate. Repairing or replacing the window frames and windows seems often the only adequate solution.
- In a number of institutions the lighting in the classrooms is insufficient for the darker days, which is mostly due to old and/or broken lamps. In some schools recently (some) lamps have been replaced by new, energy saving ones. There seems a great need to do this at a larger scale and at more schools and clubs, providing more light and saving energy. Key persons informed, however, that there is no regular budget for such replacements.
- Most institutions did not provide clear data about water consumption and electricity use. Water meters are mostly absent or not working and water is paid for on the basis of an assumed use. At least in some schools there appears room for saving water. The schools which provided data on electricity use appear to have quite different levels of electricity consumption. Proper insight in the actual use of water and electricity seems a first requirement, possibly followed by water and/or energy saving measures.
- Most institutions already have some kind of waste separation, mostly paper; some also collect other types of waste separately and/or compost their garden waste. Although options for recycling seem often the limiting factor, some more waste separation seems feasible. Hereby lessons can be learned from institutions that already have more experiences in this field, such as the Minsk Ecological Gymnasium and the Nadezhda Centre.
- The majority of the schools do not have a (working) shower; in general, this seems not to be perceived as a major problem.
- When discussing health issues, many key persons considered the lifestyle of the pupils as a problem. Healthy meals -including improved school meals- as well as promoting sport and other outdoor activities were considered among the measures to improve pupils’ health. Also a number of environmental health issues were seen as constraining pupils’ health, although this was not always specified, except for “bad drinking water”.

ANNEX 1: DETAILED INFORMATION ON THE SCHOOLS, CLUBS ANS CENTRE

Content:

Table 1 General information on the 11 school communities: schools, clubs and centre

Nr.	Name	Type	Location	Special feature(s)	No of pupils	Teachers	Respondents baseline questionnaire
1	Surovenskaya State General Basic Education School	Basic School	Surovenskaya (village in Shumilino Region, Vitebsk Oblast, 280 km from Minsk	-Eco-club "Rainbow" -Ecology and folklore hobby group "Winged patrol" -Optional course "Healthy lifestyle"	39 (11 girls, 26 boys)	11 teachers	15 in total, of which 8 pupils (5^{th} -10^{th} form), 4 teachers, 1 cook, 1 maintenance worker, 1 lab assistant (8 female; 7 male)
2	Lepel State Secondary General Education School No.1	Secondary School with advanced studies of foreign languages	Sovetskaya street, Lepel, Vitebsk oblast (150 km from Minsk)	-Ecology club -Optional course "For healthy lifestyle" -Hobby group "Flower growing"	652 (353 girls, 299 boys)	68 teachers	20 pupils (5^{th} – 11^{th} form) (10 boys and 10 girls)
3	Lepel State General Education Gymnasium No. 1	Gymnasium	Lepel, Vitebsk Region	-optional courses, hobby groups and clubs on widely varying subjects from ecology to hairdressing	563 (273 girls, 290 boys)	61 teachers	24 pupils of 10 – 17 years old (5^{th} – 11^{th} form) (girls and boys)
4	Gorodok State Secondary General Education School No. 1	Secondary Education (two shifts)	Gorodok, Vitebsk Oblast (400 km from Minsk)	-several multi-profile forms (10-11) -19 optional courses; -11 hobby groups, including an ecological club	880 (453 girls, 427 boys)	71 teachers	45 pupils of 13 – 17 years old (20 girls, 25 boys)
5	Gorodok State Secondary General Education School No. 2	Secondary School	Gorodok, Vitebsk Oblast (400 km from Minsk)		543 (258 girls, 285 boys)	53 teachers 29 tech. workers:	24 pupils
6	Novopotsk State Secondary General Education School No. 12	Secondary School	Novopotsk, Vitebsk Region (distance from Minsk?)	-32 optional / special courses, e.g. Sustainable Development", Energy Efficiency, Ecology, Healthy by Nature, etc. -Ecological Club "Prostor" with activities such as Participating in implementing Agenda 21	824 (392 girls, 432 boys)	82	42 pupils from form 5 to form 11 (from 10 to 17-18 years old)
7	Minsk Ecological Gymnasium No. 19	Gymnasium with special attention to science and ecology	Minsk	-strong accent on ecological education and training -also hobby courses, summer camps, etc, focus on ecological issues -ecological actions	748 (406 girls, 342 boys)	107	20: 14 girls, 6 boys (other boys did not want to answer the questions)
8	School No. 145 in Minsk	Secondary general education school with musical bias	Minsk	Optional courses and clubs, including the ecological club "Green light"	731 (397 girls, 334 boys)	79 teachers	19 (10 girls, 9 boys); superintendent, two deputy directors, chief school canteen, school doctor and nutritionist
9	Lepel Intellectual Club "RA"	State Centre of Children's Arts	Lepel, Vitebsk oblast	-Tested senior pupils of Lepel School on environmental	Club attendants: 63 (37 girls, 26	1 head of club	20 children (12 girls, 8 boys), 9-10 years old (4),

		(2.5% of all school children of Lepel attend this centre)	(150 km from Minsk)	awareness -Participates in intellectual festivals and tournaments (& repeated price-winner) + hosting quizzes -experience in projects with NGOs	boys); Total number of attendants of the Centre: 496	(teacher); 14 teachers	14 years old (7) and 16-17 years old (9)
10	Shumilinsky State Regional Centre of Out-of-School Work	Out-of-School Clubs (before: "House of Pioneers")	Shumilino, Vitebsky Oblast (270 km from Minsk)	Majority of clubs is on art and crafts (such as embroidery, painting, sewing, woodcarving), but also a floristic club	607 children in total; of younger and middle school age: 186 (102 girls, 84 boys)	28 (13 full-time and 15 part-time)	27 (16 girls, 11 boys) from 9 – 14 years old
11	Children Rehabilitation and Health Improvement Centre "Nadezhda"	Belarusian-German joint charitable organisation (for children affected by Chernobyl)	Vilejka , Minsk Oblast (60 km from Minsk); Located in the water protection zone of Vileyskaya water system.	Three branches: 1-Children Rehabilitation and Health Centre 2-Ecological agricultural unit (40 ha) 3-Education and tourism	270 per shift of 24 days (in school time); 400 in summer time	160 specialists	10 children (5 girls, 5 boys of 10-16 years old) and 10 adults (5 female, 5 male)

Table 2 Information on land / gardens of the schools, clubs and centre

Nr.	Name	(Agricultural) land around building?	Use of the land	Who maintains garden?	Use of fertilizers / agrochemicals in school garden	Use of food crops?	Use of other products of garden?
1	Surovenskaya School	Garden of 1770 m^2, of which 130 m^2 for flowers and 1350 m^2 for kitchen garden	Trees and bushes: apple, cherry, plum, sea-buckthorn; mountain ash, black and red currant, raspberry, gooseberry and hawthorns; Flowers: nearly 40 types! Kitchen garden: potatoes, cabbage, carrots, beetroot, pumpkin, haricot	Garden maintained by pupils, teachers and technical staff	Flowers: oxide peat and complex fertilizers for greenhouses; Vegetables: organic and complex fertilizers. Fertilizing not by pupils. No pesticides / insecticides In buildings: diclophose to control fruit flies (applied in August when no children in school)	Vegetables used to prepare school meals	
2	Lepel Secondary School No.1	Total: 2.24 ha Flowers: 120 m^2 Greenhouse: 200 m^2 Grass: 1.95 ha	Birch, flowers, greenery and grass	Members of hobby group "Flower-growing"	No manure, fertilizer or pesticides used. Ammonium nitrate is used for plants growing inside the school building	Greenery used for preparing school meals	In art lessons to make compositions
3	Lepel Gymnasium No. 1	642 m^2 for flower beds	Trees: birch, lime, chestnut, maple, poplar, acacia, etc. New: fruit trees as apple, cherry, plum Vegetables: beetroot, carrot, onion, haricot.	Pupils (digging, planting, watering, weeding), biology teachers and workers	Only organic fertilizers; No pesticides and insecticides	For making school meals; Fito-bar serves herbal tea	Making herbarium and collections; for research works in hobby groups and optional courses.

			Various flowers				
4	Gorodok Secondary School No.1	There is land around the school with trees and flower beds	Maple, lime, chestnuts, ash trees, hawthorn, barberry, birch, oak, etc Flowers	Pupils look after the flowerbeds (planting, watering, weeding, tillage, fertilizing)	Organic fertilizers	Not applicable (no vegetables grown)	Parts of herbs and trees for herbariums
5	Gorodok Secondary School No.2	2.6 ha with play ground and sport ground	Flowers and trees	All surveyed pupils participate in maintaining school garden	96%: school uses fertilizers 20%: school uses agrochemicals	Not applicable (no vegetables grown)	20% of respondents use some products
6	Novopotsk Secondary School No. 12	19,634 m^2 with flower beds, grass stadium, "biocenose[26]", and a folkloric village nook	Grass, bushes, trees (birch, maple, ashtree, firs, lilac, etc.), flowers. No room left for vegetables and fruits, but only mini herb garden (parsley, dill, celery, mint, anise, thyme, etc.)	-81%: yes (collecting garbage, planting, weeding, compost making, gathering seeds; also looking after old cemetery near school)	31%: school uses fertilizers, 55%: don't know. 7%: school uses agrochemicals; 57%: don't know; 35%: not used	Not applicable (no vegetables grown)	School yard is now recreation zone for population; 70% of respondents use products of garden for herbarium, research and /or science practicals
7	Minsk Ecological Gymnasium No. 19	11,153 m^2 school garden with flower beds, artificial pond and alpine hills	Trees (willow, birch, maple, lilac, conifers, etc.); flowers and agricultural crops (various vegetables)	14 (of 20): maintaining flower beds, gathering dead leaves, watering, painting fence	10: school uses fertilizer; %: no; 5: don't know Almost all: no agro-chemicals used (3 do not know)	No (agricultural crops are used in teaching and for fito-design)	17 respondents: for ecology lesson, for fito-design, for composting
8	School No. 145 in Minsk	Big school garden plot	Trees as willow, lime tree, mountain ash, dog rose, chestnut, birch, and flowers	17 (of 19): cleaning school yard, maintaining flowers, digging. Head of ecological club is responsible.	Large majority of the respondents does not know. 4 think that fertilizers are used (no-one thinks agrochemicals are used)	Not applicable (no vegetables grown)	7 (of 19) use for herbarium, natural history other lessons.
9	Lepel Intellectual Club "RA"	No land	No trees and plants nearby				
10	Shumilinsky Centre of Out-of-School Work	Only small pieces of land along fence	Perennial and annual plants on alpine hill; ornamental bushes along fence	Not by pupils	Don't know or not used	Not applicable (no vegetables grown)	7 of the 27 pick seeds; 18 of 27: Garden waste is piled up
11	Children's Rehabilitation Centre "Nadezhda"	40 ha for vegetables and crops seeds	Conifers, birch, chestnut, willow, bushes, flowers; Potatoes, beetroot, cauliflower, carrots, cucumbers, tomatoes, onion, etc; medical herbs Fruit garden with apples, plums, current, dog roses	Children clean garbage, leaves (autumn) and snow (winter). Adults participate 2 x per year at *subbotniks* (working a Saturday for free)	Only organic fertilizers used The agricultural production is based on the principles of ecological agriculture	Produce of agriculture is for the nutrition of the children; vegetables are prepared in the canteen	Fito-teas prepared from herbs; dried flowers for artistic compositions.

[26] Biocenose: a balanced association of animals and plants in a biotope

Table 3 Information on housing and energy use of the schools and clubs/centre (mainly based on interviews with key persons)

Nr.	Name	General info	Building materials	State of maintenance	Heating system	Energy consumption
1	Surovenskaya School	2 buildings at 100 m (a 1- and a 2-storey building) (1970)	Brick with insulation; windows double-glazed	Old window blocks, roof and floors need replacement	Originally central heating; then heating by firewood. Presently: by central heating again	400 kWh per day in winter; much less in summer.
2	Lepel Secondary School No.1	Building from 1936/38; gym from 1962; annexes from 1999	Brick and plastering; windows double-glazed	Repair made at cost of town authorities; redecoration at cost of school. School does not have money to replace all broken windows and old frames; some windows can't be opened anymore → bad ventilation of class rooms	Central heating	16,499 kWh/yr for the elementary school; 42,000 kWh for secondary school
3	Lepel Gymnasium No. 1	Building from 1980	Concrete panels with brick carcass; most windows double-glazed	Outdated lamps need replacement (now insufficient lighting in the class rooms)	Central heating	From 240 kWh in July (summer and vacation) to 4040 kWh in February. Average in 2007 (Jan-Aug): 1648 kWh/month
4	Gorodok Secondary School No.1	3 storey building from 1979 with canteen, 2 gymnasiums, library etc.	Brick with double glass windows; plastic windows in assembly hall and gymnasium	Replacement of window frames needed to save heat. School lighting has been repaired to save energy and to improve the light quality.	Central heating at the expense of the Regional Education Department	Total energy consumption is 5,886 kWh (per month) @ 259 rubles/kWh
5	Gorodok Secondary School No.2	School founded in 1987; 49 classrooms, 2 gyms, assembly hall, canteen with kitchen	Brick with double glass windows	General state of school building is satisfactory; every year some repairs are done. But window frames are old and a lot of heat gets lost in winter → some class rooms too cold. More than 400 lamps need to be installed.	Central heating at the expense of the Regional Education Department	High power consumption especially in winter
6	Novopotsk Secondary School No. 12	School built in 1987	Brick building; wooden window frames with double glass	Lamps are outdated, get often out of order and sometimes make much noise (lightning does not meet sanitary norms)	Central heating	Between 10,840 kWh (Sep) and 21,600 kWh (March) in the 2007-07 school year (Average: 16,584 kWh/m), which is considered very high!
7	Minsk Ecological Gymnasium No. 19	Building 40 years old	Brick with concrete plastering	General repairs needed. Roof often leaking. Floors on ground floor need replacement. Old window frames let heat out → some class rooms very cold, esp. canteen (temp can drop to 6ºC)	Central heating; heating season starts in October	Average energy consumption is 380 – 400 kWh/hour
8	School No. 145 in Minsk	1980	Building made of brick, with "thermal protection"; windows double glazed	Bad electrical equipment, unsatisfactory kitchen facilities; Old doors and window frames. (Lamps ok as recently all replaced)	Central heating	Between 400 kWh/m (July) to 11,142 kWh/m (February); Between 43-128 gigacalories per month thermal energy
9	Lepel	Room in historical building	2 double glazed	Due to the very high ceiling and the	Central heating but the	The Regional Education Department

	Intellectual Club "RA"	of 19th century with 60 m^2 and ceiling at 6.5 m (!); NB: high ceiling is functional as room is used as video studio with mobile lighting equipment requiring space	windows (4 x 1.8 m)	old tube lamps, the normal lighting in the club is insufficient (12 30 watt lamps at 4.5 m high). Due to high ceiling and room size, heating insufficient → winter temp in room 11 – 14 ºC	two 10-sectional cast iron batteries (radiators) can't properly heat the room (temp → 11ºC)	pays for the centre's energy (and for all other services) from budget; the club worker does not know any figures on energy consumption.
10	Shumilinsky Centre of Out-of-School Work	2 buildings: (1) 1-storey built after WW II; (2) 2 storey opposite (1956). Part of building (1) is occupied by other organisations	(1) wooden faced with bricks; (2) main building (2-storey): of brick, windows are insulated	(2) From outside condition seems good, but inside never any major overhaul was done, only small renewals without attention to lighting requirements, sanitary regulations and energy saving.	Both buildings have an old central heating system → very cold in winter	The Regional Education Department pays for the centre's energy (and for all other services) from budget
11	Children's Rehabilitation Centre "Nadezhda"	Self-sustaining complex (incl. 3 dormitory blocks, school, recreational / cultural space, canteen) located at 12,5 ha Established in 1994.	Buildings of brick; well insulated and maintained. Double glazed windows were installed	No explicit information about maintenance state of buildings, but apparently work has already been done to reduce energy losses (e.g. by providing double glass for all windows)	Central heating by means of own boiler; process regulated, including thermostats, which help to save energy	In 2002-05 a program on rational use of energy developed and implemented, incl use of energy saving lamps and reconstruction boiler room (from liquid oil to firewood); installation of solar collector for heating water for canteen. Diesel generator available for emergencies

Table 4 Information on (class) room conditions of the schools and clubs/centre (mainly based on interviews with pupils)

Nr.	Name	Space in classrooms	Temperature in class room	Light	Noise	Class room problems perceived by pupils	What done on energy saving
1	Surovenskaya School	4-7 pupils / class room; Enough space	Summer: 20% normal; 80% no opinion (as holidays) Winter: optimal (100%)	All: enough light in 2-storey building; 53%: not enough light in elementary school building	No problem, except a few think that pupils themselves make too much noise during breaks	A few pupils answered that broken window panes and rotten frames are a problem	Nearly three-quarters save energy, heat and water by shutting doors, switching off lights and turning off running taps
2	Lepel Secondary School No.1	18-27 pupils / class room; Enough space	Summer: hot at sunny side; Winter: cold due to bad heating system	Enough daylight; but when dark there is not sufficient light because of old lamps. (144 – 318 lux instead of the required 400 lux)	Some noise due to grass mowers and traffic outside; pupils themselves also make noise.	Bad ventilation due to old window frames; Insufficient lighting - school can't afford to buy enough lamp bulbs, but fire safety norms also prevent installing more lamps.	Pupils are made responsible for energy saving in classrooms and corridors; and "warm" windows (= insulating windows by putting materials in grooves and gluing paper strips on top)
3	Lepel Gymnasium No. 1	16-14 pupils / class room; Enough space	Summer: hot due to large windows at the south; Winter: not always	Not always sufficient light due to bad lamps	No traffic noise, but old lamps make sometimes some noise	Some broken windows; some lamps out of order	In each class one pupil is responsible for energy saving. Also turn off water taps when water is running idly.

			ok, as windows (frames) are old and some single glass				
4	Gorodok Secondary School No.1	Average 25 pupils per class; Enough space	Summer: normal Winter: 27% think temperature is not ok (73%: normal)	No problems. School lighting was repaired. Now good light and saving energy.	33% of respondents think it is too noisy due traffic at nearby highway; 67%: no problem	As school is near highway, air is polluted by car exhausts. A speed breaker is placed to force drivers to reduce speed.	Switch off lights during breaks, "warm" windows for winter; turn off water taps.
5	Gorodok Secondary School No.2	Enough space.	Summer: normal Winter: 76% too low; 24%: normal	50% not satisfied with lighting during winter (staff: not enough light bulbs in place)	No noise problems	92 %: many lamps out of order; other maintenance is good.	Windows are "warmed" in winter.
6	Novopotsk Secondary School No. 12	20-29 pupils / class room; enough space	Summer: 26%: too hot; 74%: ok Winter: 57%: too cold; 43%: ok	76%: not satisfied as lamps often out of order, not enough light, lamps flickering, noisy, etc. 24%: no problems	Majority: no Others: lamps, noisy school mates and/or sport stadium	Especially ground floor rooms are too cold in winter; A minority (14%) think that class room ventilation is not good; chinks in window frames; too low desks	Most pupils turn off light when nobody in. Also: use water efficiently and/or "warm" window frames.
7	Minsk Ecological Gymnasium No. 19	23 – 27 pupils / class room; 18: ok, 2: not enough space	Summer: ok (11); too hot (9) (where windows are faced south); Winter: ok (6); too cold (13)	All: lighting ok as new lamps	7 think noisy (pupils not behaving, machines outside building); 13: not too much noise in class room	Too cold in class rooms and especially canteen due to chinks in old window frames; 6 (of 20) pupils: ventilation sometimes not good; desk and chairs old and creaking	Turn off water taps, "warm" window frames and switch off lights.
8	School No. 145 in Minsk	19 – 29 pupils / class room; 18: ok; 1: not ok (is from class with 29)	Summer: ok (15), rest: stuffy, very hot; Winter: cold or very old (11); normal / ok (8)	All: lighting is ok; all lamps recently replaced. 2: but lamps are sometimes dim or out-of-order	7: no noise problem; 12: noisy (mainly because of other pupils; 3 because of machines or traffic outside)	11: room temperature too low in winter 13: no (other) defects in class room; 2: cracked window glasses 2: old furniture or linoleum	Turn off taps and lights; "warm" windows for winter
9	Lepel Intellectual Club "RA"	8 -15 children in the room → enough space	Summer: ok (all) Winter: too cold (all)	15: not enough light; 20: problems with lamps (insufficient light and noisy)	6: traffic noise 14: no problem	5: air to cold and damp in winter; Additional lights may overheat wiring	"Warm" windows with paper in autumns
10	Shumilinsky Centre of Out-of-School Work	8 – 16 children/ group; 21 (of 27): room too tight when all children come	Summer: not used Winter: always cold (16); cold when strong wind and hard frost (11)	Äll: not enough light in room as there are few lamps which also hang too high; windows at North	Noise because of noisy children (not because of traffic or other source)	15: air in room is "dusty"; All: not enough light (few lamps and not all work properly); Always or often (too) cold in winter (all); window frames old and rotten (6)	Closing tap, insulating windows, close doors and/or switch off lights when not needed; 4: nothing
11	Children's Rehabilitation Centre "Nadezhda"	12-20 / class room; 4-10 / dwelling Enough space.	Temperature always ok	Lighting ok in class rooms and dwellings	No noise problems	Children do not perceive any problems related to the buildings (no noise, no broken windows, etc.)	Children switch off lights and turn off taps

Table 5 Information on the water supply situation of schools and clubs/centre (mainly based on interviews with key persons)

Nr.	Name	Source of water supply	Water use (quantity)	Tariff / costs	Water facilities	Water quality	Comments / observations
1	Surovenskaya School	For drinking: 2 "draw" wells at private households in village; For technical water: central water supply system; rain water is not collected	No water meters. Assumed consumption of 10 l/d/pupil and 12 l/d/adult.	257 rubles / month /adult	2 hand-wash stands and a running tap (for washing hands), which is sufficient. No shower, no hot water.	The water of the cwss is apparently not suitable for drinking; the well water has a good taste (and does not affect health)	This is a school with 39 pupils located in a small village.
2	Lepel Secondary School No.1	Central water supply system (cwss); rain water not collected	Meters installed but not used (one under repair). Payment based on assumed standard consumption of 794 m^3 / year	1898 rubles /m^3	2 taps at elementary school; 14 at secondary school. Hot water in heating season (3 taps); in canteen always hot water. Shower for canteen workers (not for pupils)	Not good, may affect health of pupils (but no statistics)	Key person estimates that actual water use is below the standard (assumed) consumption because of water saving activities and because children miss school.
3	Lepel Gymnasium No. 1	Central water supply; Rain water is collected for watering flower beds.	No water meters, water use is calculated based on norms of the local authorities. Water use is between 85 and 97 m^3 per month (but much less during the summer holidays)	1898 rubles / m^3	Enough taps with running water; 18 water flush toilets There is a shower, but out-of-order	High level of iron, which –according to key informant- is likely to affect the digestive apparatus of children	
4	Gorodok Secondary School No.1	Town water tower (cwss); rain water not collected	The water use according to norms is about 63 m^3 per month	1633 rubles / m^3	Enough water taps; drinking fountains; no shower	According to sanitary control the water is good enough	
5	Gorodok Secondary School No.2	Cwss (usually without interruptions)	The water use according to norms is about 54 m^3 per month	1633 rubles / m^3	Hand washing facilities and showers (but latter not used)	Not quite good: the water has an unpleasant taste	The showers in the gym don't function because there is no hot water
6	Novopotsk Secondary School No. 12	Cwss of the city	Water meters in place (type Qp-10 PM-14, Qp-10PM-16). Water use in 2007 was 28 m^3 on average	Cold water: 1578.8 rubles/m^3; hot water: 72750 rubles / giga-cal.	Nearly all class rooms have running water taps (cold). In canteen, kitchen and toilets also taps with hot water. No showers	According to SES: water quality corresponds to State Standards, but contains high quantity of hardness salts and Fe-ions.	The garden is watered by hose using water from central water supply system
7	Minsk Ecological Gymnasium No. 19	From the Vileyka-Minsk central water system (for meals and household needs). For drinking:	Water meters not yet installed. Water use according to norms is about 300 m^3 per month	368 rubles / month / adult	Water taps near entrance of canteen and in the toilets; Shower with hot water	Tests reveal that cwss water is not suitable for drinking.	Disposable glasses for drinking water bought at parents' expense;

		bottled water by Amazon-Colorit company; rain water not collected			is in place which can be used after physical education (PE) lessons.		
8	School No. 145 in Minsk	Cwss Rain water is not collected.	Water meters are installed for cold and for hot water. Cold water: 1225-1885 m^3/month. Hot water: 1.48 – 19.52 gigacal / month	368 rubles / month / adult	Sufficient taps at school; No shower.	Apparently not considered as satisfactory as most pupils do not drink water from the tap.	Water use in this school is much higher than in neighbouring school (255-311 m^3) due to poor condition of taps and toilets flushes. Idem for hot water use (av. 3 gigacal in other school) as plates and dishes are washed in flowing hot water.
9	Lepel Intellectual Club "RA"	Only technical water available (cwss)	The accessible sources of drinking water; children drink water they bring with them	No information	Only cold water; no hot water.	High Fe level of the technical water	
10	Shumilinsky Centre of Out-of-School Work	Cold water is supplied by cwss in main 2 storey building; no water supply in 1-storey building	Water meter installed in August 2007, but not yet working. Water consumption determined according to norms: 15 m^3 per building per month	1650 rubles / m^3	No hot water yet, but a water heater was bought and installed, but not yet connected.	Many salts (as much scum in kettles), but taste is good and parameters are according norms.	A permanent problem is the presence of water in the cellar, which is pumped out (if pump available)
11	Children's Rehabilitation Centre "Nadezhda"	From 2 artesian wells and is purified from iron. (the centre is responsible for these wells)	The water use is measured by a water meter; use is about 1800 m^3 per month	No payment as water sources are owned by the centre	All buildings well equipped with wash stands, showers and (flush) toilets. Hot water always available (own boiler room)	Quality checked 1x per quarter by RCHE: iron and chrome often exceed norm	Quality of drinking water is seen as a problem. Many employees not satisfied with water taste. After being desalted: brown sediment.

Table 6 Information on the water supply situation of schools and clubs/centre (mainly based on interviews with pupils)

Nr.	Name	Nature of water drank by pupils when at school	Satisfied with water availability and/or quality?	Facilities for hands washing (before meals, after toilet use)	Shower	Suggestions for improvement
1	Surovenskaya School	Water from the 2 "draw" wells is used for drinking (people see no need to boil or filter this water)	Water is always available and has good taste. All think that the water quality does not affect their health (i.e. is good).	80% wash hands before meals and after toilet	No shower	Nothing regarding water
2	Lepel Secondary School No.1	No tap water; in canteen (tap) water is available	No, it contains a lot of iron and smells badly (problem in city)	3 water stands near canteen and several near the toilets	No shower	Install water filters at school
3	Lepel Gymnasium No. 1	Bottled water sold at school. Always available if the pupils have money	Yes, satisfied with quality of bottled water Not satisfied with tap water (not	Yes, available, but not always used.	Available, but out of order	Filter the tap water and make it drinkable

			drinkable as too much iron).			
4	Gorodok Secondary School No.1	From tap (53%), buy bottled water (43%), don't drink water at school (7%)	Yes (27%); NO (13%); Do not know (60%).	Facilities available: 67% wash hands before meals; 60% after toilet use	No shower	To change water pipes (as apparently they are leaking and rusty)
5	Gorodok Secondary School No.2	From tap (68%); buy bottled water (12%); don't drink water (20%)	92% not satisfied with water quality (has unpleasant taste)	School has facilities for hand washing: 56% of children wash hands before meals; 100% after toilet use.	Yes, shower available, but not functioning as no hot water	No suggestions
6	Novopotsk Secondary School No. 12	Tap water (12%); buy bottled water (50%); Boiled water from school kitchen (29%); do not drink any water at school (10%).	38%: water not always available (queues at buffet or no boiled water available). 55% satisfied with water; 45% not satisfied (tap water not reliable; bottled water too expensive; boiled water not cold enough)	Water stands near canteen and toilets available. 76% was hands before meals; 88% after toilet use.	No shower	76% has suggestions: install filters, install drinking water equipment in class rooms and provide free mineral water. 2 pupils: install showers.
7	Minsk Ecological Gymnasium No. 19	Bottled water available in every class room (17); bring water or juice from home (2); do not drink at school (1)	11 satisfied with availability; 9 not satisfied (sometimes no disposable glasses or bottled water finished); 15 satisfied with water quality; 5 not (do not like bottled water)	Water stands near canteen and in toilets: 7 wash hands before meal; 3 sometimes; 10 not. 13 wash hands after toilet use; 3 sometimes forget; 4 do not wash when in hurry.	20 (all): do not use shower at school as hot water not always available.	Bottled water should be entirely free available (instead of parents paying); installing filters to allow drinking tap water.
8	School No. 145 in Minsk	Don't drink water at school (7); water sold at buffet (5); from equipment installed in classroom at parents' expense (5); from tap (2)	Drinking water always available (11); not always (8). Yes, satisfied with quality (11); Not satisfied (4), e.g. because of strange smell and taste.	Sufficient wash stands. Most wash hands before meals (15) and/or after toilet use (18)	No shower 2: it is necessary to install a shower	Install new water taps with filters; provide proper drinking water; buy 15 liter bottles with drinking water; free drinking water.
9	Lepel Intellectual Club "RA"	17: do not drink at club; 3: drink tap water.	Not satisfied (19); satisfied (1); "No water available when you are thirsty"; do not want to drink technical water. Water contains a lot of Fe; sometimes brown colour.	Water stands near toilet, but only cold water. Therefore 5 do not wash hands after toilet use (15 do).	Not applicable.	Install equipment for drinking water or sell bottled water ("make buffet").
10	Shumilinsky Centre of Out-of-School Work	18: drink tap water 4: do not drink at school Others: drink tea	15: water always available; 9: not always available (restrooms closed, no water jug); Quality: satisfied (14); do not know (9); not satisfied (3) as scum in kettle	Wash stand near toilets. 17 wash hands after toilet use; 5 not	No shower	2 pupils: install filter
11	Children's Rehabilitation Centre "Nadezhda"	14: boiled tap water; 3: from tap (not boiled); 3: buy bottled water in canteen	Availability drinking water is ok. 13: Quality is ok; 7: not satisfied, as hard water, leaves sediments, much iron, unpleasant taste.	Facilities available for hand washing and used by all.	Yes, shower(s) available with hot water (and used)	3: buy bottled water 3: purify water 1: clean / replace pipes 1: Have prophylactic system at deferrization station and clean filters more often

Table 7 Information on the sanitation situation of schools and clubs/centre (mainly based on interviews with key persons)

Nr.	Name	Type of sanitation (toilets)	State of toilets	Privacy / facilities especially for girls	Sewage discharge	Comments / observations
1	Surovenskaya School	2 outside toilets: one for girls, one for boys (no toilet only for teachers) at 30 – 50 m from school (one wooden, the other brick)	Toilets are in satisfactory state and cleaned regularly	No special conveniences for girls for during their menstruation, but they do not miss school because of this.	The toilets have septic reservoirs which are emptied by school staff when necessary	
2	Lepel Secondary School No.1	3 toilet blocks (total 9 lavatory pans) at secondary school (1 each for girls, boys and teachers) and 2 (4 lavatory pans in total) at the elementary school (1 each for girls and boys). One pit latrine outside the school	Outside toilet is in unsatisfactory state, still used (not in winter) but intended to be removed.	No conveniences for girls for during their menstruation; therefore they sometimes leave the lessons	City central sewage system. Sewage pipes are cleaned by school workers or workers of housing / community services in cases of serious damage	Outside pit latrine toilet is planned to be removed
3	Lepel Gymnasium No. 1	18 water flush toilets, separate for teachers, boys and girls.	All lavatory pans are old	On the first floor are toilets with locked cabins with necessary conveniences for girls during menstruation	City central sewage system	Need for replacement of toilets
4	Gorodok Secondary School No.1	Flush toilets are located inside the school building; there are separate ones for boys, girls and teachers.	No info, but apparently not very good as replacement is needed.	Girls have certain problems during menstruation as no separate cabins in toilet blocks, but can use teachers' toilets. Girls get permission to be absent during menstruation.	School sewage system is connected with the town's central sewage system	Toilet equipment needs replacement.
5	Gorodok Secondary School No.2	Indoor water flush toilets	Toilets outdated	No attention to the need for special conveniences for girls during menstruation.	The sewage system functions well.	Some drawbacks in the state of school toilets. Need for replacement.
6	Novopotsk Secondary School No. 12	8 water flush toilets: 3 for boys, 3 for girls and 2 for teachers.	All in satisfactory state; they are cleaned several times a day.	In 2006 the toilets for girls were redecorated and equipped with new cabins, new lavatory pans and wash stands.	Connected to the city sanitation system.	
7	Minsk Ecological Gymnasium No. 19	Separate toilets for girls and boys (inside building)	Repair of toilets planned to be done by end 2007 (due to lack of money not yet completed)	When separate cabins will be installed (planned for end 2007), needs of girls will be met and they won't need to be absent during (PE) classes.	Connected to city sewage system	After the repair the toilets will be equipped with separate cabins. The present unfinished toilets influences the educational process in some way.
8	School No. 145 in Minsk	8 toilets: 3 for boys, 3 for girls and 2 for teachers. Quantity of toilets is enough.	One sanitation stanchion (toilet block) is modern; another is old and in poor state.	No special conveniences for girls having menstruation; that is why they sometimes miss class.	Connected to central sewage system	Need to replace flushing tanks, sanitation pipes in toilets and cellar and provide equipment of showers and bidets.
9	Lepel Intellectual Club "RA"	One toilet with two lavatory pans in the building. Outside: a brick	Apparently water flush tanks need repair	No separate toilets for boys and girls	Indoor toilets connected to the central sewage system.	

		toilet with toilet pit at 30 m from building.				
10	Shumilinsky Centre of Out-of-School Work	Two toilets on secondary floor, of which one is for children and one for adults.	Conditions are improving, but still not enough.	No proper facilities for girls, but as the lessons are quite short (0.5 – 2.5 hour), girls usually do not come in a critical situation, but there is some discomfort.	Central sewage system	A heater for water (for the wash stands) is installed but not yet connected because of the old wiring.
11	Children's Rehabilitation Centre "Nadezhda"	Enough flush toilets	All sanitary and sewage equipment in a good state. Toilets regularly cleaned.		Sewage treated at biological station with the help of pneumatic aeration and stabilization of active silt.	

Table 8 Information on the sanitation situation of schools and clubs/centre (mainly based on interviews with pupils)

Nr.	Name	Cleanliness of toilets	Satisfied with toilets?	Avoiding use of toilets?	Suggestions to improve sanitation	Special suggestions by the interviewed girls
1	Surovenskaya School	100%: cleaned well	87%: satisfied	No info	No info	No info
2	Lepel Secondary School No.1	Not satisfied	Not satisfied (toilets not tidy enough and no separate cabins that can be locked)	It is common that pupils avoid using the toilets	To make separate locked cabins	Girls are not satisfied; suggest having toilet blocks for girls with hot water and sanitary towels in case of need.
3	Lepel Gymnasium No. 1	Yes, toilets are tidy	Not all toilets are in satisfactory state	Pupils do not avoid using the toilets	Replace old lavatory pans with new ones	Problem: absence of separate locked cabins. Suggestion: make separate locked cabins.
4	Gorodok Secondary School No.1	Yes, always tidy enough	67% satisfied with state of toilets; 33% not.	13% avoids use of toilets (feel shy) (no locked cabins)	27%: make separate cabins	54% of girls: not always satisfied; 13% not at all; 13% satisfied. (No explications or suggestions – but apparently need for cabins that can be locked)
5	Gorodok Secondary School No.2	84%: tidy enough	88%: satisfied	No	To install new lavatory pans	All responding girls are dissatisfied with the facilities at school (for during their menstruation). Suggest separate toilet cabins.
6	Novopotsk Secondary School No. 12	79%: yes; 21%: no	81% satisfied	10% sometimes avoid (e.g. because feeling shy as too many people in corridor)	48% has suggestions: make toilet paper always available; place mirrors and/or hang hand dryers.	44% of girls not satisfied. Suggest: make bidets in the toilets (11 girls); install shower cubicles (2)
7	Minsk Ecological Gymnasium No. 19	18: yes 2: no	9: satisfied 7: not satisfied 4: not always	4: avoid as sometimes locks out of order, toilets sometimes dirty and bad smell and/or sometimes no toilet paper.	Functioning locks at cabins; ensure good smell; toilet at ground floor need repair	10 girls: satisfied; 4 girls: not Suggestion: functioning locks in toilet cabins.
8	School No. 145 in Minsk	8: yes, tidy 5: not tidy;	5: yes, satisfied 11: no	10: yes, sometimes avoid (dirty and bad smell; overcrowded	Make separate locked cabins (9); put toilet paper (4); use air fresheners /	10 (of 12) girls: not satisfied. Suggestions: make locked cabins

		6: partly (sometimes bad smell in toilets)	3: partly	during breaks, “awkward lavatory seat” and/or toilet paper not always available.	cleaners (3); have toilets cleaned more often (2); make foot rest on lavatory pans (1) and hang mirror (1)	(4); availability of necessary medicines at school’s first-aid post (1); Attendance of PE should be free during menstruation (1).
9	Lepel Intellectual Club “RA”	19: yes, tidy enough 1: not	16: not satisfied as queues (only one toilet for all) 4: yes	No avoidance in using toilets	To repair water flush tanks; to make separate toilet for girls	10 girls: not satisfied 2: satisfied
10	Shumilinsky Centre of Out-of-School Work	21: always clean 6: not	21: satisfies 6: not	9 avoid using toilet, as the toilet is constantly occupied by someone else	17: doors should be installed in the toilet cabins	Some girls satisfied, others not. Suggestion: connect hot water
11	Children’s Rehabilitation Centre “Nadezhda”	All: tidy	All: satisfied	No avoidance in using toilets	No suggestions for improvements	All girls and women respondents: satisfied

Table 9 Information on the waste situation of schools and clubs/centre (based on interviews with key persons and pupils)

Nr.	Name	Waste disposal	Separation of waste?	Garden waste?	Burning of waste?	Opinion of pupils on burning waste
1	Surovenskaya School	Waste bins in corridors and special rooms.	Kitchen waste and waste-paper are collected separately	Burnt on school grounds, sometimes during school times	Dead leaves and branches are burnt	80% think it can affect health because it causes air pollution, e.g. headaches and exacerbation of energy.
2	Lepel Secondary School No.1	Waste bins in classrooms and toilets. All waste (incl. kitchen waste) put in containers at school ground. When full, the waste is taken to the dump.	No separation	Collected on the school ground and then taken to the dump	No burning of waste	Aware that burning waste affects health (air pollution and bad odour)
3	Lepel Gymnasium No. 1	Waste bins in class rooms and corridors; containers at distant corners of school yard.	Kitchen waste is collected separately and sold to population; pupils: paper to special recycling points	Dead leaves are composted	Apparently no burning of waste	Yes, as harmful substances pollute the atmosphere
4	Gorodok Secondary School No.1	Waste bins in class rooms and corridors	Only kitchen waste is separated (apparently to be given away as animal feed)	Dead leaves also into the container	Apparently no burning of waste	80% of responding pupils think burning waste can affect health as it pollutes the atmosphere
5	Gorodok Secondary School No.2	Waste disposed by the communal service	60%: separate waste collection (waste paper collected 1 – 2 times per academic year)	Dead leaves disposed into the waste container	Apparently no burning of waste	92% know it is harmful to burn waste
6	Novopotsk Secondary School No. 12	Waste bins in rooms and corridors; 3 containers at school yard and this waste is	Separate collection of waste paper and scrap metal, passed to special	Dead leaves and cut grass into compost pits; a small part is left on the ground	No waste burnt on territory of school	88% say burning waste is harmful as smoke affects lungs, provokes coughs, air pollution and the

		collected daily	recycling points			products of burning are harmful.
7	Minsk Ecological Gymnasium No. 19	3 bins in each classroom for separate waste collection and special containers in yard, collected by private company "City Ecology"	Separate waste bins for paper, plastics and other garbage everywhere. Food remains also collected separately.	Part of dead leaves is composted, rest taken away from city by special transport to the dump	No waste burnt on territory of gymnasium	All pupils are aware that burning waste affects health as smoke pollutes the atmosphere, causes diseases and has other environmental consequences.
8	School No. 145 in Minsk	Waste bins in classrooms and corridors	No separate waste collection, except for waste paper collected 3-4 times per academic year	Dead leaves and agro waste is dumped	The school burns some waste in summer as waste collection is not organised properly	12: yes, burning waste can affect health (pollutes air with harmful smoke (7)) 5: no 2: do not know 1: no significant problem
9	Lepel Intellectual Club "RA"	In waste containers, taken off by communal services	No separation	In waste containers (but no trees / plants near school → hardly dead leaves)	No waste burnt	All think burning waste affects health as objectionable odour, destroying ozone layer and can cause fire.
10	Shumilinsky Centre of Out-of-School Work	Waste collected by cleaners and thrown in containers	Waste paper. Workers of OSW hand it over to recycling points	17 respondents: dead leaves are composted	Apparently no waste is burnt	15: Do not know if burning waste affects health; 7: yes, it does.
11	Children's Rehabilitation Centre "Nadezhda"	A program on separate waste collection is in progress	Separate: paper, plastic and dead leaves. No separate collection of glass yet as still problems in its further use.	Dead leaves etc are composted; what is too much (i.e. exceeding need of organic fertilizer) is transported to the nearest forest.	Apparently no waste is burnt	17: yes, burning waste affects health (harmful gases, hard metals and CO_2 exhausted into atmosphere; 1: not harmful; 2: do not know.

Table 10 Information on the health situation of pupils of the schools and clubs/centre according to the key persons

Nr.	Name	Most frequent health problems among pupils	Is water quality / environment affecting health?	Smoking at school?	Main priorities to improve pupils' health
1	Surovenskaya School	Annual raise of acute respiratory diseases during winter (5 → 85%); poor eye sight (20%); flat feet (6%) and spine curvatures (3%).	No (nor any other acute environmental problems)	Teachers do not smoke; some pupils smoke, usually at the toilets.	-avoid overwork due to high study volume and have good day schedule; - promote healthy lifestyle, more sport and tourism, more time in open air; -have well-balanced meals
2	Lepel Secondary School No.1	Spine curvature caused by using same furniture for pupils of different ages and adenoma of thyroid (70% of pupils) by environmental problems	Water quality is not good and perhaps if affects health, but there are no statistics about this.	Smoking prohibited at school for pupils and adults	-improve quality of drinking water (e.g. by filters); -use of furniture suitable for age, both at school and at home; -to improve quality of school meals (more vegetables, fruits and juices) and promote healthy lifestyle (non-smoking, sports, physical condition, good day schedule)
3	Lepel	Poor eyesight, musculoskeletal system diseases,	High iron level is likely to	Teachers and pupils	Outdated technology of the kitchen facilities (to

	Gymnasium No. 1	cardiovascular diseases and digestive disorders	affect digestive status of children	do not smoke at school; some pupils smoke outside school territory	prepare school meals) and the absence of a dish washer
4	Gorodok Secondary School No.1	Respiratory diseases (especially in winter), poor eyesight, dysfunctions of cardio-vascular system (increase in blood pressure disorders) and digestive apparatus. Children have diseases cause by hereditary factors and bad environment. Missing school mostly by respiratory and chronic diseases; girls sometimes also during menstruation.	No info	No info	-observance of sanitary and hygiene requirements at school and at home -improvement of school nutrition -a more healthy life-style, including more sports -more knowledge on preventive health among children, teachers and parents
5	Gorodok Secondary School No.2	62% of all 543 pupils in 1st health group; 24% in 2nd; 13% in 3rd; and 1% in 4th health group. Main reason to miss classes: respiratory diseases. Poor eye sight is most frequent health problem (26% of pupils). Also: nervous disorders (8%), vertebrae disorders (5%), stomach and digestive disorders (4%); heart and vessel (2%), uro-genital diseases (2%), respiratory disorders (1.2%) and endocrine diseases (1%).	In general: bad environment causes diseases of endocrine system, respiratory and congenital diseases		-observe a good daily schedule -well-balanced nutrition -healthy life-style (more sports, less TV and computers) -reduced work loads to protect children from nervous breakdown -improved ecological situation.
6	Novopotsk Secondary School No. 12	40-70% of all pupils get a cold every year, especially in winter; 32% of children have poor eyesight; 5% musculoskeletal diseases and 3% endocrine system diseases (mainly thyroid gland problems)	Environmental problems of Novopotsk affect children's state of health	Smoking at school is forbidden, but a group of pupils smoke in yard; most teachers do not smoke at school. With help of Ecology Club try to fight smoking at school, but this is not easy.	-improvement of lighting -replacement of window frames and installation of more radiators for better heating -healthier lifestyle, more sports -establish Physical Culture and Sport centre at school ground -rehabilitation of pupils in summer vacations (in camps) -more greenery around school
7	Minsk Ecological Gymnasium No. 19	Somatic diseases most common and main reason for missing school. Incidence of chronic diseases increasing. Also poor eyesight, spine problems, stomach-aches, and heart and vessel disorders.	Water apparently affects health and installing water filters is proposed	No info from key persons	-equip class rooms with air moisture and air ionization and strict control over ventilation -more greenery, especially plants with bactericide properties in class rooms -parents should keep child with cold at home
8	School No. 145 in Minsk	Colds and spine curvatures	Health of pupils is not affected by water quality or other environmental problems	Some smokers who smoke outside the school	-reconstruction of school canteen -free access to drinking water -repairs to building to make school more habitable in winter -reconstruction of toilets, repair sewage pipe in cellar -equipment of sport club in cellar -showers and cabins for personal hygiene -equipment of fito-bar (to make / sell herbal tea)
9	Lepel	Absence due to health problems mainly occurs	Drinking water is not	Not inside building	Better heating and lighting

	Intellectual Club "RA"	during the period October to March	always accessible here.		
10	Shumilinsky Centre of Out-of-School Work	Absence occurs due to eyesight problems	Most children drink tap water and are satisfied with the quality; no indoor toilet	No smoking inside building	Better lighting
11	Children's Rehabilitation Centre "Nadezhda"	Children come with different health problems or diseases (no statistics). They come to the centre to improve their health.	Good environment (natural surroundings) affect health positively	Smoking outside the centre / in forest zone	Not applicable

Table 11 Information on the health situation of pupils of the schools and clubs/centre according to the interviewed pupils

Nr.	Name	Missing school due to illness?	Most frequent diseases (according to pupils)	What affects your health?	Smoking, alcohol and drug use among class mates?
1	Surovenskaya School	80%: 1-2 x per year 20%: 1-2 x per quarter	Respiratory problems	All: water quality and state of sanitation at school does not affect our health; 100%: smoking is bad for health of smokers; 53%: also for non-smokers' health; 53%: smokers will study badly.	100%: classmates smoke; 40%: classmate drink; 100%: no drug use
2	Lepel Secondary School No.1	Majority: 1-2 x per year	Respiratory diseases	Pupils think that water quality and poor state of sanitation can affect their health	Some pupils start smoking in 9th form (but outside school territory). Pupils do not know about alcohol or drug use.
3	Lepel Gymnasium No. 1	1-2 x per year	Poor eye sight	Water is not drinkable as high iron content	Smoking outside school territory; no knowledge on use of alcohol and drugs.
4	Gorodok Secondary School No.1	13%: never 33%: 1-2 x a year 33%: 1-2 x per term 21%: 1-2 x a month	80%: colds	13%: highway pollution; 87% no environmental affects on health 27%: water quality affects health; 73%: not so, as deferrization station	Either think that no classmates smoke, use alcohol or drugs, or do not know.
5	Gorodok Secondary School No.2	71%: 1-2 x per year 16%: 1-2 x per term 8%: 1-2 x per month	Not asked from students	56%: bad environment affects health 85%: bad water affects health	32%: there are some smokers; (rest: no or do not know); 12%: some drink alcohol; (rest: no or do not know); 88%: no drug use (rest don't know)
6	Novopotsk Secondary School No. 12	52%: 1-2 x per year 31%: 1-2 x per term	30: cold, flue, respiratory diseases; 21: poor eye sight; 10: spine curvatures; 8: head ache; 8: digestive disorders; 3: kidney and liver diseases	98%: harmful exhaust and polluted air; 95%: water can affect health (stomach-ache, diarrhoea, kidney and liver diseases.	31%: some smoke (rest: no or do not know); 24%: some or many drink (rest: no or do not know); 79%: no drug addicts (rest don't know).
7	Minsk Ecological Gymnasium No. 19	14: 1-2 x per year 6: 1-2 x per term	Cold, respiratory diseases, spine curvatures, bad eyesight, digestive and cardiovascular disorders	Bad environment affects health (bad water quality, polluted air, radiation, poor quality food) Water quality can affect health "as water is the basis of our life and building	14: some smokers; 4: many smokers; 2: do not know 14: some drink alcohol; 5: nobody; 1: does not know 14: no drug use; 6: do not know

				material of our cells"	
8	School No. 145 in Minsk	14: 1-2 x per year 4: 1-2 x per term 1: 1-2 x per month	12: cold; 4: flue Rest: stomach-ache, headache, tonsillitis, acute respiratory virus infection, chicken pox	11: yes (harmful gases, polluted air, factory or car exhaust gases, dust from construction works, noise) 7: no (as many green plants here)	10: yes, there are some smokers 6: nobody smokes 5: some classmates drink alcohol 16: nobody uses drugs
9	Lepel Intellectual Club "RA"	4: 1-2 x per year 13: 1-2 x per term 3: 1-2 x per month	Acute respiratory diseases	13: yes (harmful gases of factories and plants; agro-chemicals) 5: good environment in Lepel 2: do not know	12: yes, smokers; 8: do not know Smoking is done outside the building / at the corner 15: some children drink alcohol; 16: do not know about drug use.
10	Shumilinsky Centre of Out-of-School Work	15: 1-2 x per year 6: 1-2 x per term	17: cold 7: bad eyesight	15: do not know	Almost all do not know about smoking, alcohol or drug use of other children in their group
11	Children's Rehabilitation Centre "Nadezhda"	1-2 x per year	cold / acute respiratory diseases; cardiovascular diseases, neural disorders, spine curvatures	Yes, environment can affect health, especially radiation, water treatment facilities, acid rains, air pollution, NO_3	14: some smokers Children: nobody drinks alcohol; Adults: Many drink, but in free time Nobody uses drugs

Table 12 Information on the food consumed at the schools and clubs/centre according to the interviewed key persons and pupils

Nr.	Name	Meals provided at school	Buffet	Pupils like school meals?	Pupils buy from buffet?	Food from home?
1	Surovenskaya School	Varied 3 course menu, with salads 2x, dairy 2x and fish 1x per week.	No buffet	100% satisfied with school meals, good for health as contain lots of vitamins, and vegetables and fruits are grown in own garden without insecticides / pesticides	No buffet at school	No
2	Lepel Secondary School No.1	Hot breakfasts and lunches with porridges, vegetables, fish, meat, salads, tea, compote, kissel (thick fruit drink boiled with starch)	Juice, yogurts and pastry	All like school meals: they are good for health (salads, porridges, kissels, meat and fish)	Tea, rolls, and pastry	No
3	Lepel Gymnasium No. 1	Pupils of form 1-4 (6-11 yrs old) get free meals paid by state (@1540 rubles per junior pupil/day). Older pupils have meals at parents' expense. Breakfast and lunch. Borsch, vegetable or milk soup as 1st course; 2nd: meat, fish, food from semi-products or pancakes. Daily vegetable salads.	Yes	Yes, pupils like school meals and they are healthy as vegetable salads are provided daily	Mineral water, juices, fruits, cheese, yogurts, dried fruits	No
4	Gorodok Secondary School No.1	School meals provided	Confectionary, dairy products, fruits, salads, etc	87% like the school meals; 100% think they are good for health	Tea, juice, rolls, pizza, salads and soda water	Yes
5	Gorodok Secondary School No.2	School meals provided	Yes	36% like school meals; 32% do not like school meals	Yes, there is a buffet	68% yes

6	Novopotsk Secondary School No. 12	76% of pupils get daily hot breakfast; children in extended classes get also lunch. Meals partly prepared at school, partly by caterer specialised in school nutrition. Superintendent approves menu in advance. Basis of meals: porridges, meat, fish, potatoes and dairy products (salads can be bought in addition)	Salads, juices, confectionary and pastry. N.B. sweet soft drinks and chips are **not** sold at school buffet.	79% likes school meals; 21% not. 10% does not take school meals; 72% think meals are healthy (as porridges, dairy products, meat, and made hot and by competent specialists); 19%: meals not healthy.	100% buy from buffet (mineral water, tea, juice, buns, apples, salads and pastry)	43% yes (fruits, cookies, sandwiches, sweets or chocolate)
7	Minsk Ecological Gymnasium No. 19	School meals provided. It can be very cold in the canteen in winter, with temperature falling to 6 ºC	Yes	4: like school meals 5: not always 11: does not like	10: cola and other soft drinks; 7: juice 3: tea	3 bring food from home; 11 have school meal; 6 buy from buffet
8	School No. 145 in Minsk	School meals are cooked with as main products: vegetables, fruits and cottage cheese	Yes, but absence of bar does not permit to provide all interested with bottled water during breaks	5: like school meals 5: do not like school meals 6: sometimes / not always 10: school meals are not healthy (always cold, dirty plates, tainted cutlets, cooks don't wash hands) 9: healthy (1: but tasteless)	15 buy juice, mineral water or tea; 9: rolls, pastry 2: apples, oranges, waffles and/or cheese 2: salads	6 bring something from home (juice, water); 12 do not
9	Lepel Intellectual Club "RA"	This is a club, so no school meals provided	n.a.	n.a.	n.a.	n.a.
10	Shumilinsky Centre of Out-of-School Work	This is a club, so no school meals provided	Apparently herbal tea is provided	16: like tea (herbal tea good for health)	n.a.	8 bring tea and/or biscuits
11	Children's Rehabilitation Centre "Nadezhda"	No info on school meals from key persons	Yes	All children and 4 adults like school meals (vegetables, tasty, well-balanced); 4 adults do not like (big portions, too rich in calories)	Ice-creams, chocolate, sweets, mineral water	Children: no Adults: 8 (of 10) bring food for snacks and lunch

Table 13 Information on the main priorities at the schools and clubs/centre according to the interviewed key persons and pupils

Nr.	Name	Main overall problems / priorities according to key persons	Pupils' most urgent problems at school	Pupils: most urgent environment related problems
1	Surovenskaya School	-Lack of information on energy efficient consumer goods among pupils and parents; -Lack of information on environmental problems in cities among village pupils - Need for an ecological classroom -Technical workers: replacement of old window frames	Need to buy computers, TV-sets etc.	Pupils apparently do not perceive such problems
2	Lepel Secondary School No.1	No listing of overall problems in baseline report	Problems with studies in one or several subjects	The problems with drinking water and the toilets
3	Lepel Gymnasium No. 1	-Poor eyesight because of insufficient lighting in classrooms -Musculoskeletal problems as furniture does not correspond to pupils' age;	-Insufficient lighting → poor eyesight -Furniture does not correspond to pupils' age	Insufficient lighting, poor quality of drinking water, low temperature in class rooms in winter

		-Bad drinking water quality; -Low temperatures in classrooms in winter		
4	Gorodok Secondary School No.1	Insufficient school facilities	Laziness, big volume of homework, discipline, relations with teachers	27%: old window frames 40%: highway near school 33%: do not know
5	Gorodok Secondary School No.2	Insufficient lighting, old lamps. They have gone completely out of order during 30 years of operation. State financing is not enough to replace them and there are no other sources.	- Insufficient lighting, old lamps (92% of the respondents) - It is cold in winter - Bad (untasty) drinking water	- Insufficient lighting, old lamps - Cold in winter - Bad drinking water; pupils think it affects their health
6	Novopotsk Secondary School No. 12	- Bad lighting in many classrooms (lamps installed 20 years ago) - Low temperature in cold season (window frames defect → temperature down to 12-16 ºC, especially when windy) - Would like to supply children with bottled drinking water but cannot afford it.	17%: no problems Rest: bad lighting, cold classrooms in winter, big volume of studies, having to wear school uniform and don't like the desks of the classrooms	24%: no such problems or don't know 76%: school situated in Novopolotsk, which "is the problem itself" (as most polluted town in Belarus because of its chemical and oil-processing plants) Also: classrooms need to be warmed, no hot water in classrooms, insufficient drinking water supplied, and few containers for separate waste collection.
7	Minsk Ecological Gymnasium No. 19	-Filters required to clean cwss water so parents would not have to buy and pay for bottled water - need for lighting regulators -repair of toilets needs to be completed (but lack of money)	4: no problems; Rest: Big volume of studies; obligatory school uniform; bad relation with teachers; get tired; don't like studies; don't like school meals.	17: bad quality of water 9: tasteless school meals 8: some pupils do not collect waste separately 6: a lot of smokers 3: health problems 2: old school building / repairs 1: garbage at school yard
8	School No. 145 in Minsk	-Equipment of school canteen (e.g. stove) is outdated; refrigerated counter out of order; no dishwasher; -low temperature at school in winter -poor state of toilets -lack of drinking water -too high energy consumption	4: unsatisfactory state of toilets 4: bad (compulsory) nutrition at school; 3: (big volume of) studies; 2: uncomfortable desks, chairs and torn linoleum 2: compulsory school uniform 2: "my own carelessness" 1: communication with class mates 4: no (serious) problems	5: dirty canteen and toilets 3: low temperatures in winter 2: school near road; 1: toilets and water 1: small buffet 4: no problems (1: no environmental problems as classrooms full of flowers and lot of flower beds)
9	Lepel Intellectual Club "RA"	Low temperature in room, insufficient lighting	Low temperature in room, insufficient lighting	Low temperature in room, insufficient lighting
10	Shumilinsky Centre of Out-of-School Work	-insufficient lighting (high ceilings, old lamps) -no hot water, problems for girls' personal hygiene -water in cellar of the building -central heating old, too cold in rooms in winter	21: cold in winter 17: bad lighting 8: no hot water 5: too many children in club 3: dusty in the room	12: high ceilings
11	Children's Rehabilitation Centre "Nadezhda"	-Continued work on waste disposal problem: need to train staff, new batches of children, problem of campers and local inhabitants polluting forest and reservoir banks -Quality of drinking water	4: discotheque ends too early 3: long distance from home (as boarding) 2: compulsory lessons 2: short stay (only 24 days)	Unsatisfactory quality of drinking water A lot of garbage in forest (by local inhabitants and campers)

Table 14 Main problems and issues deducted from baseline surveys and first ideas for a project

Nr.	Name	Problems / Issues deducted from all sections of the baseline survey	Suggestions for addressing needs[27]
1	Surovenskaya School	-Lack of information on energy efficiency and environmental problems among pupils and their parents -Need to promote a more healthy lifestyle among pupils and for special ecology classes, including for an ecological classroom -Need to replace old window blocks in one building as well as roof, floors and window blocks in the other building -Garden waste is burnt on school ground*	-Create educational programme on ecology; on how water, electricity and heat are supplied; consequences of careless consumption; link ecology – economy; -Library on these subjects, also with simple equipment for water analysis, norms for lighting and heating in schools, etc. -Enlightening work among parents
2	Lepel Secondary School No.1	-Water quality not considered good and water meters not used (under repair); -Toilets not satisfactory and no proper sanitary conveniences for girls; -Broken windows and window frames need repair/replacement (but school lacks funds) -Lighting in classrooms not sufficient -Furniture size not adjusted to age of pupils	-Improve the quality of drinking water, for example, by installing filters -Instalment of energy saving lamps to improve lighting and reduce energy use - Substitution of old window frames and replacement of broken window glasses
3	Lepel Gymnasium No. 1	-Outdated (and sometimes noisy) lamps causing insufficient lighting -Furniture not in in accordance of age of pupils -Temperature too low in winter in some class rooms, due to some single windows and/or need to replace window frames -Old sanitary facilities in need of replacement -Tap water not drinkable, too much iron -Kitchen facilities of the canteen outdated, absence of dishwasher	-Replacement of outdated lamps for modern, energy saving lamps -Replacement of furniture in accordance to age of pupils -Replacement of old lavatory pins, wash stands and other sanitary infrastructure
4	Gorodok Secondary School No.1	-Need to replace toilet equipment and provide proper hygiene conveniences for girls -Low temperatures in some classrooms in winter and need to replace window frames -Polluted air as highway nearby	-Replace window frames (and other possible measures) to save heat and rise temperature in classes in winter -Replace toilet equipment and provide better hygiene facilities for girls
5	Gorodok Secondary School No.2	-Toilet equipment need replacement, showers of gyms not functioning and absence of hygienic conveniences for girls during menstruation -Quality of tap water not good -Old and deficient window frames contribute to low classroom temperatures in winter -Insufficient lighting in classrooms contributing to poor eyesight	-Funding for the replacement of 840 lamps
6	Novopotsk Secondary School No. 12	- Lamps outdated, sometimes noisy and not providing enough light nor energy efficient; - Temperature in classrooms in winter too low, largely due to poor window frames - Tap water contains too many hardness salts and iron - Lack of healthy lifestyle among pupils; difficult to keep students from smoking	-Improvement of lighting in classrooms and other school premises by substitution of outdated lamps for modern, energy saving lamps -Substitution of old window frames -Instalment of drinking water equipment in classrooms -Preventive health care programme including sports, outdoor activities, summer school / camps, promoting healthy lifestyle, etc.
7	Minsk Ecological Gymnasium No.	- Tap water not suitable for drinking and water meters not yet installed - Building needs repair (roof, floor); toilet repairs ongoing but lack of funds	-Filters to clean running water -Installation of lighting regulations

[27] Some institutions listed suggestions to address the environment-related problems in general, whereas others seemed to focus on one priority, the latter apparently for a pilot project.

	19	-Old window frames contributing to low room temperatures in winter, especially in canteen (even as low as 6ºC)	-Install solar system to save energy and as demonstration project -More greenery in classroom
8	School No. 145 in Minsk	-Low temperature in school in winter due to old windows / window frames -More than half of respondents not satisfied with school meals; canteen equipment outdated; refrigerator counter out of order, no dishwasher -Poor state of (part of) the toilets, girls not satisfied with facilities; -Too high use of hot water (plates washed with running hot water as no dishwasher) as well as cold water (flushers not working well); water quality not good -Waste collection not always properly organized → sometimes need to burn waste*	-General repair of school canteen (is planned for 2007-08) -Replacement of old and broken window panes and doors, using warm keeping materials, heat isolation of walls, warming of floors in 2 classrooms (causes high humidity which makes it even colder in winter; they also want to use basement as a training room) -Replacement of flushing tanks, sanitation pipes, buying new mixers (mixing hot and cold water), and equipment for showers and bidets -Instalment of drinking water equipment in corridors -Buying lamps with photo elements / indicators of movement to save energy in rooms not often used -For more healthy students: fito-bar and sports facilities
9	Lepel Intellectual Club “RA”	- Heating is main problem (big size of room and unsatisfactory, old heating system) - Not enough lighting as lamps are old and hanging too high - No drinking water available (only technical water)	Energy saving measures that will solve the problems of insufficient heating in winter and the poor lighting.
10	Shumilinsky Centre of Out-of-School Work	-insufficient lighting (high ceilings, old lamps) -no indoor toilet, no hot water, problems for girls’ personal hygiene -water in cellar of the building -central heating old, too cold in rooms in winter	To establish filters for drinking water, To buy and install new energy saving lamps, To make some kind of bio-toilet for 1-storeyed building, which does not have any sewage system, To organise separate collection of plastic waste and to buy containers and press for plastic
11	Children’s Rehabilitation Centre “Nadezhda”	-Continued work on waste disposal problem: need to train staff, new batches of children, problem of campers and local inhabitants polluting forest and reservoir banks -Quality of drinking water	Further work on the “waste disposal” project, including expanding the positive experience to neighbouring villages and in the places of residence of the children; Indirectly: revive and develop glass recycling plats in Vileysky region.