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Economic Costs of Tobacco Use in Montenegro

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Introduction

The question we ask in this paper is: what are the economic costs of tobacco use in Montenegro? However, it is very difficult to answer. The argument that tobacco imposes social costs that must be minimized and adjusted for through public policy is the basis of economic policies for tobacco control. It is important to quantify accurately such social costs: low estimated costs can be used by the tobacco industry to argue against the implementation of tobacco control policies, whereas higher social costs can be used to justify further government intervention. The total costs of tobacco consumption to the community as a whole consist of private costs and external (or ‘social’) costs.¹ Costs knowingly and freely borne by the consumer are deemed to be private costs. All other costs are external (social) costs. Thus external costs include costs borne by tobacco users who are not fully informed of the consequences of tobacco consumption.

The costs imposed by tobacco can be either ‘tangible’ or ‘intangible’. Tangible costs include health-care costs (prescription drugs, medical and health services, hospital and other institutional services); production losses resulting from sickness, death and reduced on-the-job productivity; welfare provision (avoiding double-counting); fires and accidents; pollution and litter; and research and education costs (although it can be argued that these last are discretionary costs rather than inevitable results of smoking). Intangible costs include pain and suffering of smokers, passive smokers and others (for example, the bereaved) and lives lost by active and passive smokers. This paper will concentrate on tangible costs.

Furthermore, we can divide tobacco costs into positive and negative. For example, tax is paid for every box of cigarettes which is sold. Therefore, it increases the budget, which would be negative cost of tobacco consumption. Also, smokers die younger, so pension payments are decreased. However, due to the complexity of the issue, we will consider only positive costs. Furthermore, since proposed research topic was Economic costs of tobacco use, we would like to bring to your attention that it was found out that cigarettes

¹ Collin D. and Laplsey H., “The Economics of Tobacco Policy”

represent majority of tobacco consumption as well as that many people consider consuming of pipes as „smoking“ . Therefore, the major part of the research refers to use of cigarettes.

Description of the project

Montenegro is a state that is still in the process of economic transition. That is the reason why subjects that cover different aspects of economic development were in focus of research and studies done until now. On the other hand the issue of health economics, as very important, was not in the focus of the researches. That is why this research that for a subject has an issue related to the health economics is completely innovative research for Montenegro and will probably have significant value for development of the Montenegrin economic analysis and research area.

Smoking is one of the major factors that influence population's health in Montenegro. According to the ISSP Households survey, average monthly household expenditures for tobacco represents 3.7% of total household expenditures which is enormously high percentage in comparison to other countries. On the other hand there is no statistical data on number of smokers in Montenegro or costs of tobacco use and there is no antismoking strategic policy defined. In addition, people are aware of the fact that use of the cigarettes damages their health but are not aware of the fact that it causes many costs to the users and to the society in general. Having this on mind it would be very valuable and useful to estimate the costs of tobacco use in Montenegro in order to increase awareness of population and provide a good base for policy recommendations.

In particular, estimates of the economic and social costs of tobacco use in Montenegro is valuable for: estimation of number of smokers in Montenegro, estimation of the importance of anti smoke polices, appropriate targeting of specific problems and policies, identification of information gaps, research needs and desirable refinements to national statistical reporting systems, providing a baselines measures to determine which policies

and programs are the most effective in reducing the harm associated with tobacco use, etc.

The aim of the study is to calculate and analyze costs of tobacco use in Montenegro. The main findings from the study would provide the first real evidence of the costs of tobacco use in Montenegro and based on them propositions for the policies that can contribute to the decrease of these costs and tobacco use in general, which is the main added value of the proposed project.

Empirical evidence

Heart disease and cancer are two leading killers, but most people do not realize how substantial part is played by smoking-related deaths. Important externality affecting health arises from the widespread use of tobacco products, primarily cigarettes, throughout the world. Two types of externalities exist from smoking. First of all, smoking itself is unpleasant to many people, possibly more than smokers themselves realize. The second and more serious externality arising from cigarette smoke has now become more carefully understood—even nonsmokers' health risks increase when they spend considerable time in close proximity with smokers. Many studies conducted over the past several years show significantly heightened risks of lung cancer, heart disease, and other lung diseases from nonsmokers who live in a house with at least one smoker. Indeed, one study demonstrated that even the dogs of smokers had a 50 percent increased risk of dying from lung cancer, compared with dogs whose owners did not smoke.² The magnitude of second hand smoke morbidity and mortality is yet to be fully determined, but evidence continues to accumulate that this is a more serious externality than had been previously recognized. Unfortunately, there is no study that clarifies the role of this particular type of externality in Montenegro. However, even with incomplete information, it seems safe to say that cigarette consumption creates an important health externality, certainly for those within the household, and possibly in other surroundings

² Phelps, Charles, Health Economics, Addison Wesley-3rd edition

as well. In this paper we have tried to analyze the consequences of this behavior just as for any other externality, and that is one of the issues we were focused on in our study.

Unfortunately, the exact number of smokers in Montenegro is not known. Serbia and Montenegro is ranked as fifth in the World and third in Europe by number of adult smokers.

In market economy, which Montenegro aims to become, the consumer's sovereignty is regarded as given: The consumer is free to choose. However, many exceptions can be found in any basically free society- cases where society encourages or discourages the consumer's desired choice. For example, society encourages and promotes use of seat belts. In a similar spirit, society often discourages the purchase and consumption of cigarettes. The question that comes to our mind is whether society should intervene in private decisions. We acknowledge free-choice but we believe that the reason to intervene in private decisions could be paternalistic, but it also could appeal to economic efficiency. Cigarette smoking affects not merely the cigarette buyer and seller-effects that are internal to cigarettes market-but also the health of non smokers nearby, which is an external cost. Furthermore, many economic approaches assume that there are no arguments to intervene if the consumer chooses rationally and voluntarily, is reasonably informed of the risks, and creates no side effects for others. However, because cigarette consumption is addictive, the issues of rationality, preference, and information take on extra weight. Therefore, for us, the question is not whether to intervene in private decisions to smoke, but how to do so more effectively and discreetly. Two most frequently used tools are: imposition of excise taxes and restrictions on advertising. Excise taxes on tobacco in Montenegro are 10-20 euros/kg. Excise taxes on cigarettes are 20-40%. The second tool has not been used in Montenegro so far. Advertising can be restricted by increasing the cost of advertising through tax code revisions, but most often the public issue is whether to restrict advertising by total or selective bans.

In developed countries use of tobacco products is rather regulated than left to the property rights and markets. During the past decades, many countries have imposed regulations that limit the areas where smokers may smoke in public buildings, including

office buildings, restaurants, airports, schools, hospitals and so forth. In Montenegro similar law does not exist. However, a draft version of this law was passed few months ago and it should be adopted soon. This law promotes everybody's right to live in the environment not polluted with cigarette smoke, which is very encouraging. The law forbids smoking in closed public areas and public places. Furthermore, the Law should protect the young from the temptation to use cigarettes by limiting the availability of cigarettes as well as by creating a different public perception.

Moreover, we should be aware of the effects of smoking on the environment, and costs that are induced to the society in this way. In the ecological state, which Montenegro claims to be, this issue should be carefully evaluated.

The highest cost one society might have is human life. As afore mentioned, smoking affects not only health of the smoker but health of the people in his or her surrounding as well. The extreme case of this externality is smoking during the pregnancy. The fact that developed countries run statistical data on morbidity with respect to the number of mothers that smoke during their pregnancy, shows that this problem should be treated more seriously. A negative relation between cigarette consumption and new-born baby health has been determined. In addition, developed countries provide professional services and groups that are organized to help people quit smoking and address the problem of alcoholism – this type of activity is does not exist in Montenegro. Furthermore, public is not educated very well regarding this issue. Thus education which would start as early as in kinder garden or elementary school should decrease number of smokers, and consequently number of people who die from the smoking related diseases.

Having all previously said in mind, the aim of the study is to calculate and analyze costs of tobacco use in Montenegro in order to give recommendations for policy decision making process and increase public awareness on significant use of tobacco and its consequences. In order to achieve this aim research was trying to give answers to the following question: “How high are costs of tobacco use in Montenegro”. In order to better approach the research question in one of the first phases of the project ISSP

estimated the percentage of people who smoke and their profile as these data in Montenegro do not exist. The focus of the research was on the estimation of the costs of tobacco use while at the final phase of the project policy recommendations were created based on the maintained calculations, analyses as well as the analyses of tobacco regulation.

Answer to the research question provides, first of all, statistical and economics facts and findings that currently do not exist in Montenegro. Second, they give arguments for policy recommendations and third they open some new questions for future analyses of the different issues of health economics. The defined research questions are not original and were researched by different authors previously. However, this kind of analyses is completely new for Montenegro and presents a significant contribution to the development of the economic research in Montenegro. The research will probably put attention to health economics issues which are not the subject of the research and analyses in Montenegro at the moment.

Obtained results can be divided into four parts:

I Phase: Estimation of number of smokers in Montenegro

The statistical data on number of smokers in Montenegro do not exist. That is why the first step in the research was the estimation of the number of smokers in Montenegro. The data that were used for this were data from the Household Survey that is conducted by ISSP. Until now ISSP has conducted eight separate issues of the Household Survey (HHS). Survey is carried on the basis of random sample. Sample base is created based on list of citizens that had a right to receive vouchers in the process of Mass -Voucher Privatization that was held in 2001. This data base of individuals age above 18 was marked as the best database in Montenegro, even better than the voters list for elections. The first three surveys had a sample of 2000 households, in 12 (out of 21) municipalities in Montenegro and refereed only on household's income. Survey No. 4 and No. 5 had sample of approximately 1800 individuals residing in 500 households, from all Montenegrin

municipalities and referred to household's income and expenditures. The last three, sixth, seventh and eighth survey, had sample of 800 households from all Montenegrin municipalities and also referred to household's income and expenditures.

After the questionnaire design which is done by ISSP in cooperation with other relevant institutions, a training program for all pollsters is organized. Each time when a new module is added to the questionnaire a new training program is organized. The interviewing process is done on the field. Each pollster gets the list of the household names that he or she has to interview. After the finalization of the survey supervisory are checking every fifth questionnaire by the phone interviews. After the finalization of this process the data are inputted in the database, database is checked and after that the data are processed.

For the first time, in the seventh survey questions included pertaining to household expenditures. The questionnaire was developed by and is available at ISSP and covers the following topics: family accommodation, property, health, main job, income from the main job, unemployment, etc. Importance of this Survey was also recognized by international institutions. Beside European Commission Food Security Programme and Chesapeake Associate (USA), Household Survey was additionally supported by the World Bank.

In addition on the request of the World Bank office in Montenegro additional health module is incorporated in the questionnaire for the seventh survey. The questionnaire was developed in cooperation with the World Bank representatives. This module consist questions on the use of tobacco, for example: Have you ever smoked cigarettes on a regular basis?, Do you still smoke or have you totally quit? How long ago did you totally quit smoking? etc. As the ISSP has right, provided by the World Bank office, to use the data for its own research it was possible to use the research findings for estimation of number of smokers in Montenegro for the purposes of this research. In addition as survey offers data on the status of the households and individuals it was possible to make analysis of number of smokers among different age and social groups and by that create a very comprehensive picture of smokers' population in Montenegro. The survey showed the following.

Out of total number of surveyed households, in 52% of them at least one person is a smoker. This percentage is almost the same in both urban and rural areas. Among the households consisting of two persons, 39.9% of household members are smokers, and in the households consisting of more than six persons, 70.2% of household members are smokers.

Out of all surveyed persons, 29.3 % have been smokers. Considering the genders, we notice that there are more smokers among males than among females. Namely, 34.3 % males are smokers, while the same percentage among women is 24.4 %. When we look at the same percentage among the groups created by marital status, we notice that the highest percentage of smokers is among the group of divorced people (47.7 %, meaning that almost every second divorced person is a smoker).

Looking by the age groups, the highest percentage of smokers is within the group of people between 36 and 50 years of age. Even 42 % of people in this group are smokers.

The following questions were answered only by people who are or who were smokers.

Asked to answer with how many years they started to smoke, minimum answer was 9, and maximum 55 years. Average age was 19.3. Most of the people started to smoke when they were between 11 and 18 years old. It is interesting to notice that in the older age, women are more likely to start to smoke than male.

Out of all persons who have been smokers, every fifth person (20 %) quit smoking. It is more likely that male will stop smoking than female. Namely, 21 % of male respondents quit smoking, while the same percentage among females was 19.4 %. Considering age groups, it is most likely that person older than 65 will stop smoking. Even 37.3 % of respondents older than 65 quit smoking.

Further, respondents were asked to answer after how many years of smoking they quit smoking. Average number of years was 8.79 (minimum was 1 and maximum was 55). Most of the persons, in all groups, quit smoking because of the health issues.

In order to calculate costs of buying cigarettes, we must obtain information on consumption per smoker. Average weekly consumption of cigarettes is 135 cigarettes (almost seven boxes), meaning approximately one box per day. Most of the people (51.9 %) smoke between 5 and 7 boxes per week.

Illnesses related to smoking

Out of all respondents, even 41.5 % suffer from the respiratory system illness. Almost every fourth person (23.1 %) suffers from coronary illness, and every fifth person (20.8 %) has a disease which can be related to smoking.

It is very interesting to mention that more than a half of smokers who are sick (52.2 %) believe that their disease is not related to smoking at all. Only 18.8 % of respondents who have some of the above mentioned diseases believe that their disease was caused by smoking. Also, it is very interesting to notice that more males than females believe that their disease was caused by smoking. Also, more educated persons are more likely to believe that their disease was caused by smoking than less educated persons.

Persons who were sick were further asked whether they had to stop their regular activities or not. Out of all smokers who were sick, 14.6 % of them had to stop their regular activities. On average, they had to stop their regular activities for two days. Most of them were forced to stop their regular activities from 2 to seven days (38.6 %). Even 27.3 % of workers who had to stop their regular activities stopped it for 15 to 30 days. Males and more educated people are more likely to stop their regular activities than females and less educated persons.

II phase: Estimation of economic costs of tobacco use

Standard economic theory implies that the demand for any product will depend on its price, the prices of other products, incomes, tastes, and other factors. The impact of addiction on demand is something that economists have considered for many years. However, they have ignored the addictive nature of goods such as cigarettes when estimating demand or have assumed that behaviors such as smoking were irrational and could not be analyzed in the rational framework of economics. That is why the starting point of our economic analysis follows from the observation that smoking is an addictive behavior that is largely beyond the control of individuals once they have started to consume tobacco. However, as over the past few decades, economists have increasingly analyzed addictive behaviors in theoretical and empirical models, these models were examined at the beginning of the research. This was done in order to define a theoretical framework in which the further analyses and research would be placed and in order to make connection of the empirical work maintained under the project and theoretical approach to the defined subject.

The economic costs to the economy of smoking include the costs imposed on those individuals as well as the costs imposed on others by this behavior. Many analyses consider only the costs that smokers impose upon others and not the costs that they impose upon themselves. As opposite to these analyses we will consider the costs of smoking to both the smokers themselves and the society at large. In defining the model on which the research would be based, different models of tobacco costs estimation would be reviewed and based on the analyses the best possible model for use in the case of Montenegro would be defined.

In considering these costs, we would divide them into two categories. The first is direct and measurable costs to the economy: this consists of categories of costs which are both readily measured and unambiguously related to smoking behavior. The second is indirect and more difficult-to-measure costs to the economy: this consists of other categories of costs for which there is either dispute over the exact relationship to smoking, or the

quantification of the cost figure, or both. These costs include: Lower Productivity Among Workers, second hand smoke and so called “Gateway Effects”. However, as these costs would be really hard to estimate in Montenegro we mainly focused our research on the estimation of direct costs of tobacco use, but also tackled some of the intangible costs (e.g. lower productivity).

Direct and Measurable Costs

1. Medical Spending

The estimation of medical spending for treatment of smoking related illness was the first task of the project as these costs present the majority of the total economic costs of tobacco use. As a data source for estimation of these costs official statistic data were used. Also, data from HHS questionnaire were used in the estimation process.

Public health institutions in Montenegro are organized on the three levels – primary, secondary and tertiary level. Primary health institutions are health centers, secondary level are general and special hospitals (which also have some tertiary level services), while tertiary level institution is Clinical Center, located in Podgorica. There are an eighteen health centers in Montenegro, seven general and three special hospitals.

Out of three special hospitals, one is specialized in treatment of respiratory diseases, especially pulmonary diseases(‘Dr Jovan Bulajić’- Brezovik, or shortly Brezovik).

The cost of treatments in public health institutions is covered by the Health Insurance Fund (in charged for health insurance), if the patient is covered by health insurance scheme, or individually if not.

Usually, consumption of tobacco could be linked to some respiratory system diseases and cardio-vascular diseases, such as lung cancer, throat cancer, bronchitis, sclerosis,

hypertension, infarctus myjocardii, etc. In this part, we will describe the procedure in treatment of these diseases. There is more or less the same procedure is the same for all types of diseases.

1.1. Procedure for patients' treatments in the health institutions

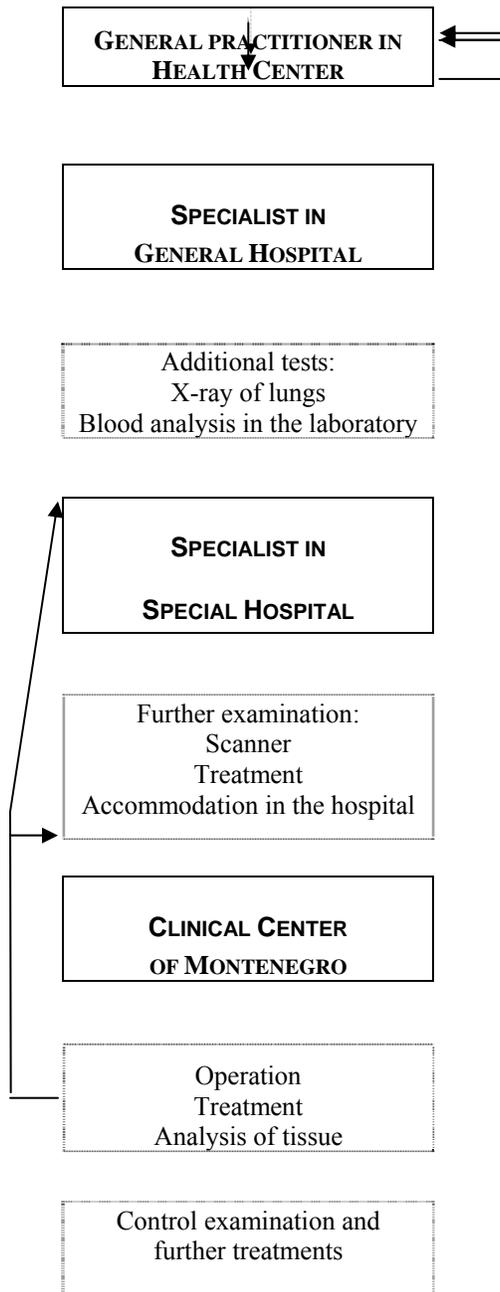
Usually, treatment procedure starts with general practitioner examination, i.e. on the primary level of health protection. If estimated by the general practitioner that further examinations and test are necessary the patient receives a prescription to a specialist in the general hospital for precise diagnose.

For example, if person is suffering from some pulmonary disease, first he or she will go the general practitioner, who will give a prescription to a specialist. After visiting specialist, usually in the General Hospital, the patient will do some additional tests, and if the specialist estimates that, the patient is suffering from some serious disease of respiratory system, the specialist will give him a prescription for Special Hospital in Brezovik (hospital specialized for respiratory system diseases, only in Montenegro). The patients are usually accommodated in the hospital for a certain period, while some additional test are done and the patient receives a therapy as prescribed by the doctor in this hospital.

If it is determined by detailed examination that patient is having lung tumor, or some disease requiring surgical intervention, patients are than referred to Clinical Center of Montenegro. In the Clinical Center (CCM), patients are usually accommodated several days before the operation, and additional tests are pursued, in order to check whether the patient is ready for operation (blood pressure, blood analysis, and other problems that might occur). After the surgery, patients stay in the CCM from 5 to 7 days. The sample of tissue is than sent for analysis in Belgrade, and based on this analysis, the post-operative

condition of patient and estimation of medical commissions³ it is decided whether the patient should be released from the hospital and should it continue with chemotherapy.

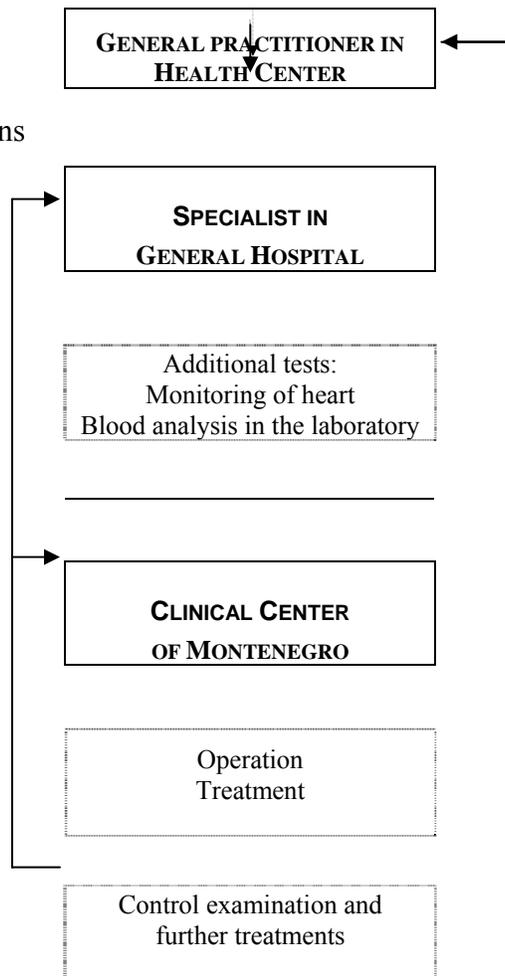
Picture 1. Procedure for treatment of pulmonary diseases in public health institutions



³ Medical commission is composed of doctors which were involved in surgery and treatment of patient in the CCM.

Similar procedure is for cardio-vascular deceases. Only difference is that there is no special hospital specialized for these types of diseases. However, all General Hospitals have special ward for these illness.

Picture 2. Procedure for treatment of cardiovascular diseases in public health institutions



In some cases, some surgeries are done outside Montenegro in Serbia. In that case, the medical commission approves the treatment in the hospitals in Serbia, and the cost of treatment is covered by the Health insurance Fund.

The described procedure is in practice much more complicated and includes some additional or excludes some steps, which of course, depends on the type and the status of disease.

1.2. Cost of treatments in public health institutions

The costs following this procedure are high. Each inspection that patient has, from general practitioner is implying costs, which are that billed to Health Insurance Fund, if patient is covered by Montenegrin Health Insurance.

Unfortunately, Montenegrin health system, so far, has not differentiated the patients according to their habits regarding tobacco consumption. In addition, there is no precise or official information on the number of smokers in Montenegro.

However, from Special Hospital in Brezovik we have received some detailed information on their patients, which makes is easy to determine what is the cost of treatment of smokers.

On average, every year SH Brezovik has 138 patients, according to their researches⁴, share of their patients who consume tobacco products is around 50% (50.7% in 2001, while 43.5% in 2004). On the other hand, the share of patients in total number, whose disease is caused by smoking, is around 30%.

Table 1: Overview of costs and the structure of the patients in the Special Hospital in Brezovik

	2001	2002	2003	2004
Total expenditures	€ 1,385,601.00	€ 1,573,611.98	€ 1,745,000.00	€ 1,643,515.00
Stuff expenditures	€ 588,496.97	€ 705,823.29	€ 762,000.00	€ 768,693.00
Number of beds	141	141	141	141
Average number of patients	138	138	138	138
Average price of one day spent in the hospital	€ 17.36	€ 26.50	€ 26.50	€ 26.50
Average price of treatment (excluding accommodation)	€ 12.19	€ 18.76	€ 18.76	€ 18.76
% of patients consuming tobacco	50.7%	56.5%	44.9%	43.5%
% of patients whose diseases is caused by smoking	31.2%	29.7%	28.3%	30.4%

⁴ Doctor Zivkovic, working in Brezovik hospital, is doing some researches in the area of smoking and health hazards, so he provided us with some data from its researches.

Average number of days spent in the hospital	25	28	26	24
Morbidity by the cause	73	75	68	76
Lung cancer	44	48	49	52
TBC	1	1	-	1
Other diseases of respiratory system	28	26	19	23

Source: *Special Hospital Brezovik*

If we apply same percentage on the amount of cost that this hospital annually spends on providing treatment of patients, than the annual cost of treatment of smokers in this hospital is roughly € 0.5 million.

However, this is only one part of the cost. Total cost of treatment should also include treatments on the primary and tertiary level.

Table 2: *Amount and structure of SH in Brezovik costs in 2002*

	In €	%
Total expenditures	1,573,611.98	100.00
Stuff cost	705,823.29	44.85
Medicines and sanitary materials	384,624.09	24.44
Food	111,637.08	7.09
Utilities	110,300.13	7.01
Depreciation	83,751.21	5.32
Medical forms	3,792.65	0.24
Stationary	2,528.43	0.16
Representation	4,092.44	0.26
Equipment	5,313.41	0.34
Maintenance costs	33,161.98	2.11
Cleaning items	4,748.46	0.30
Technical material	7,345.80	0.47
Insurance	3,699.35	0.24
Other expenditures	112,793.67	7.17

Source: *Institute for Health of Montenegro, Statistical Year Book 2002*

Therefore, when calculating total cost of treatment of smokers in Montenegro, one should start from primary, to secondary and finally tertiary level. In addition, the cost of medical treatment must include the cost of medications, prescribed by doctors in public health institutions, which are also financed from the Health Insurance Fund, as well as the cost of participation, which persons pay when visiting practitioner.

In order to estimate the public cost of smokers health protection and treatments, we have used total number of diagnoses for the respiratory system diseases and cardio-vascular diseases, and have applied similar logic as in the case of Brezovik.

Table 3. Overview of public spending on health

		Expenditures 2002
1	Clinical Center of Montenegro	22,195,580.71
2	Health Centers	27,636,203.68
3	General Hospitals	14,606,433.12
4	Special Hospital Brezovik	1,573,611.98
5	Total expenditures (primary, tertiary, secondary level)	69,074,909.25
6	Total public cost of health protection in Montenegro	92,085,015.38
Treatment of patients consumers of tobacco products		
7	Cost of treatment in the public health institutions	3,796,384.28
8	Cost of medicines on prescriptions	664,262.00
9	Participation of patients	26,205.50
10	Total cost	4,486,851.78
11	Treatment of smokers (%of total public cost)	4.9%
12	Treatment of smokers (%of GDP)	0.3%

Source: Institute for Health of Montenegro, Statistical Year Book 2002

In addition, based on the percentage share of cost in hospitals and health centers care for smokers, we have estimated the cost of medications and cost of participation fee (paid during visits).

According to our estimates, total public expenditures on treatment of smokers in Montenegrin health system makes roughly € 4.5 million € annually. The treatment of smokers in public health institutions makes 4.9% of total costs, or as a share of GDP makes 0.3% of GDP.

2. Smoking during Pregnancy

A clear example of the human and economic cost that smoking imposes is the effect of smoking during pregnancy. Smoking while pregnant has been found to increase the severity of complications during pregnancy and delivery. Smoking during pregnancy also doubles the risk of having a low birth-weight baby. The increased costs of complicated deliveries, costs of increased medical care of low-weight babies and the increased costs due to developmental difficulties comprise medical costs that are caused by the smoking during pregnancy.

Estimation of these costs was based on two sources: ISSP research and Health Clinic of Montenegro. The ISSP research was held in cooperation with frequently visited gynecology ordination. The questionnaire was designed by ISSP researchers in cooperation with several doctors (gynecologists and other specialists). As usual, after the finalization of the questionnaire the training for pollsters was organized. The sample was made by ordinations from all major municipalities in Montenegro in order to cover all three main Montenegrin regions (north, central and south).

The results of the survey are as follows.

Out of total number of female respondents older than 15, 5.4% of women suffer from sterility. It is very interesting to notice that, considering marital status, most of the women who suffer from sterility are separated. In this group, even 18.2 % of women suffer from sterility.

Following questions were answered only by women who had at least one pregnancy. Most of them (34.6 %) had two pregnancies, while 27.3 % of women had three pregnancies. Women who are or who were smokers were asked whether they were smoking during the pregnancy or not. During the first pregnancy, 38.4 % of women decreased consumption of cigarettes, 22.1 % quit smoking, while 37 % of women did not change their habits. The later the pregnancy (second, third, etc.) the more women did not change their habits. During the fourth pregnancy, almost half of the women did not change their habits regarding the smoking.

Most of the women who quit smoking did it during the first two months of pregnancy.

Considering complications during the pregnancy, it is evident that women who were smokers had more complications than women who were not. During the later pregnancies (especially after the third pregnancy), percentage of women who have had complications during the pregnancy was increasing among women smokers, and was significantly higher than among non-smokers. For example, during the fourth pregnancy, 11.9 % of women smokers had complications during pregnancy, while the same percentage among non-smokers was 2.5 %.

Considering women smokers, 3.1% of first pregnancies were terminated, and 1.1 % resulted with dead born baby. These percentages decreased during the second pregnancy, but again started to significantly increase with the third pregnancy. For example, during the fourth pregnancy, 5.8 % of pregnancies among women smokers were terminated, and 1.9 % of pregnancies resulted with dead born babies. Same percentages among the women non-smokers were significantly smaller.

Further, women were asked about the weight of the new born babies. It is evident that babies of the women non smokers weighted more than babies who mothers smoke. On average, this difference is around 200 grams, which is a significant difference considering that we are talking about newborn babies.

At the end, women were asked if their child was born with a disease. Women smokers had more children born with a disease than women non-smokers. During the first pregnancy, 1.53 % of women smokers gave a birth to a child with a disease, while the same percentage among women non-smokers was 0.68 %.

After all these findings, it is evident that smoking influences lives of the babies. Due to the missing of data, it was not possible to quantify these costs. It will be more detailed discussed under the Final recommendations.

3. Lost Output and Workdays

Smokers usually die younger and retire sooner than non-smokers. The premature retirement and deaths means lower output and lost wages. In addition, smokers miss more workdays than their non-smoking colleagues.

The sources of those costs were Household Survey and Health Institute of Montenegro. Household Survey module contained questions related to number of sick-leaves from work due to illnesses caused by smoking, smoking at work and length of smoking-breaks at work if there are any. The design of the additional questionnaire module was done in cooperation with the relevant experts (doctors and medical workers). The sampling followed the regular procedure for Household Survey. In the process of training of pollsters some of the creators of the questionnaire were involved. The interviewing process, surveying procedure and data inputting, checking and proceeding followed regular ISSP procedures, already explained.

The results from the survey are as follows.

Among smokers who work, 71, 86 % smoke at the working place. This percentage is almost the same in all groups (by sex, education, etc). Further, they were asked to answer how many cigarettes they consume while they are at work. Minimum answer was 2, maximum 50, and average was 12. Most of the persons (41.1 %) smoke between 6 and 10 cigarettes.

More than half of them (50.8 %) do not take a break while smoking and 49.2 % of smokers who work take a break in order to consume a cigarette. Regarding this issue, there is a significant difference between male and females. Even 60.9 % of males do not take break in order to smoke, and 63.1 % of females take a break in order to consume a cigarette. Also, more educated persons are taking more smoking breaks than less educated.

Workers who are taking breaks were asked to specify duration of the break. Minimum answer was 2 minutes, maximum 60, and mean answer was 10.6 minutes.

Therefore, it is obvious that smoking at working place affects productivity of all smokers, regardless to the fact whether they are taking breaks or not.

4. Other Direct Economic Costs (fires, costs for cleaning and repainting homes and offices due to smoking)

There are additional real costs that smoking imposes on others but which are very often are not taken into the account. These costs are called “externalities” and should be included in the estimation of overall tobacco costs as well. In that respect damages caused by fires started by smoking should be estimated. In addition, costs for cleaning and repainting homes and offices due to smoking also present economic costs of tobacco use.

The source of those costs was the research based on questionnaire addressed to Fire Stations in four largest municipalities. The answers required from Fire Stations were related to newest data of total number of fires caused by inflamed cigarettes, total square meters of fire caused by inflamed cigarettes, average cost of quenching fire by squared meter and average costs of renewing area damaged by fire caused by inflamed cigarettes. The questionnaire was designed in cooperation with the people employed at the fire stations. The sample covered all three Montenegrin regions (south, central and north). The interviews were conducted by the pollsters in the direct contact with the representatives, responsible person, from the fire station after the preliminary agreement of the interview by the phone.

The questionnaire about costs of cleaning was related to time, cost and frequency of cleaning closed spaces (offices and homes) in the cases of non-smoking inhabitants, partly smoking inhabitants and all smoking inhabitants in order to make a difference between those two cases. The questionnaire was designed in cooperation with the people employed at the cleaning firms.

According to data of Inspectorate for Fire Protection in 2003 in Montenegro there were 571, while in 2004 there were 121 forest fires. This difference is due to the weather conditions in 2003, which was characterized by large number of sunny days with very small quantum of rainfalls, high temperatures and small air humidity.

Damage in the forest regions differs by municipalities and by size of fires. According to the data of Forest Management damage was 168,267 euros in 2003, while in 2004 damage was 37,457 euros. Average cost of fire extinguishing is 200 to 350 euro for fire, while recovery cost (which includes transport cost and supply of seedlings cost, cost of digging holes and planting of seedlings, cost of replacement and clearing) amounts to 3,057 euros per hectare.

From the conversation with competent persons from the Forest Management, we have found out that 90% of forest fires are started on purpose, while cigarette stubs caused around 5% of forest fires.

According to presented data we have calculated damage, cost of recovery and cost of fire extinguishing, as a result of fire started with the cigarette stub, for 2003 and 2004.

Table 4: Total cost and damage as a result of fire started with the cigarette stub

	2003	2004
<i>1. Damage</i>	8,413.35	1,872.85
<i>2. Fire extinguishing cost</i>	8,565	1,815
<i>3. Recovery cost</i>	198,770	39,754
<i>Burned area in hectares</i>	65	13
<i>Total (1+2+3)</i>	215,748.35	43,441.85

Note: amounts are given in euro

From the table we can see, that attained damage, fire extinguishing cost and recovery cost, as a result of fire started with the cigarette butt, in 2003 amounted 215,748.35 euros, while in 2004 amounted 42,442.85 euro.

According to the Forest Management only in the forest region there is a possibility to start the forest fire with cigarette stub, which is why we have excluded object fires from

this analysis. Cigarette stub can be and often is a cause for fires in the regions with small sprouts, dry grass, etc. mostly by roadways in the Central and South Region. But such fires are easy to spot and they leave enough time to react quickly in order to prevent fire spreading, which quite narrows the damage. Weather conditions in period May – September characterized by high temperatures and small air humidity provoke fires caused with cigarette stub.

In this analysis we have included all regions in Montenegro which present potential danger for striking fires caused by cigarette stub.

Regarding the cleaning costs of the residences, results are as follows. Even though in 52 % of the households at least one person is a smoker, only 41% of surveyed households think that residence cleaning cost is higher because they have a smoker in the household. Among the households from the urban region, this percentage is smaller (37.7%), and consequently among the rural households is higher (45.5%).

Also, people who live in the apartments consider smoking as a smaller problem than people who live in the houses. Only 32.8% of households who live in the apartments think that smoking increases residence cleaning cost, while same opinion have 44.8% households living in the houses. Moreover, what is very interesting is that households having more members consider smoking as a bigger problem. Even 73% of households consisting of six or more members consider that smoking increases their residence cleaning costs. On average smoking increases the residence cleaning costs by 50 Euros.

Most of the households paint their apartments at least once per year (57.1 %). Among the households which paint their apartments at least once per year, 80 % of them have at least one smoker. Also, rural households paint their apartments more often than urban households. However, this can be not only due to the smoking but also due to the heating system.

Asked to answer how much their household spends on cigarettes monthly, minimum answer was 3, and maximum 300 Euros. Average answer was 35 Euros.

When we observe spending on cigarettes by groups, we notice that 48.4 % households spend up to ten Euros on cigarettes monthly. Around 20 % of households spend between 20 and 40 Euros, and only 3.4 % spend more than 70 Euros on cigarettes per month.

When we compare total spending on cosmetics, water, maintenance of the cars and apartment, and similar expenses, of households which have smokers in the household and those which do not, we can notice that households which have smokers spend more. Average annually expenses on those items of households which have smokers are 930.33 Euros, and of households which do not have smokers 758.24 Euros. However, it is interesting to mention here that households which have smokers on average have higher income than non-smoking households.

III Phase: Analysis of tobacco legislation and different policy measures that can contribute to the tobacco use decrees

The aim of this phase of the research was to analyze current legislation that had any connection with the tobacco in Montenegro as well as analysis of legislation in other countries (that have positive results in the implementation of this kind of legislation expressed in the reduction of tobacco users). This analysis as a result had the list of legislative issues that can be used in the fight for smoking reduction.

The Law that regulates the use of the tobacco products in Montenegro is called the Law referred on limitation of tobacco use, passed in July 29, 2004. Its practical use started in February 11, 2005. By this law, in order to prevent life and health, are prescribed the measures for reducing and limiting the tobacco use and also for preventing the serious consequences of tobacco use.

The goals of this law:

1. to afford the legislative answer on the increased problem of public national health;

2. to prevent the health of Montenegrin population, from very frequent number of diseases provoked by tobacco use;
3. to protect young persons and the others from addiction on tobacco use and tobacco dependence;
4. by limitation of selling tobacco by making difficult the access to tobacco products;
5. to create public sense by cooperation of state departments as well as civil society.

In the process of Law preparation, comparative experiences of ex-Yugoslav Republics are used as well as the experiences of developed countries (Finland, Italy, United Kingdom, France, Belgium, Ireland, Germany, Spain, USA, USA federal unit rules, Canada, federal provinces of Canada rules, Australia, published models of Smoking control Laws. Also the EU rules are consulted.

3.1 The concrete rules of the Law referred on limitation of tobacco use

The control of harmful ingredients in cigarettes and compulsive signs on tobacco products.

According to EU rules it is forbidden to sell and produce cigarettes that contain more than 10 mg. of tar, 1 mg. of nicotine and 10 mg. of carbon monoxide in each cigarette. The measurement of these substances is made on the basis of ISO standards. The Law forbids the circulation of cigarettes that have no data about the content of the tar, nicotine and carbon monoxide, and also the tobacco products that have no printed warnings about how harmful is smoking. It is considered that the warnings should be printed by black letters on the white basis, the dimensions are also considered, and the producers can choose which one of the proposed warnings they will put on the face and surface of the package. This rule is accorded to EU direction⁵ by which the harmful ingredients of cigarettes are controlled.

The law also prescribes the obligate measurements of harmful ingredients as well as the delivering of the documentation and data about harmful ingredients to Institute for Public Health in Montenegro. The Institute has an obligation to report The Ministry of Health about the results

⁵ *Directive of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the member states concerning the manufacture, presentation and sale of tobacco products, Brussels, 1999/0244 (COD), 16. 11. 1999.*

of measurements, as well as about the other for health protection very important data about tobacco products.

The measurements for reducing and limiting the use of the tobacco products. By special rules of this Law are regulated the aspects that are connected to prohibitions for juveniles and concrete prohibitions toward selling of tobacco products and products that have the shape of tobacco products or signs that refers to tobacco product. By resolution of reducing smoking in EU⁶, The EU Council recommended to the member states certain measurements in this area. In the process of preparation of the Law, the experiences from comparative legislation like for example, The Canadian Law, 1997, The Ireland Law from 2002 and the Slovenian Law from 2003, are used.

One of the key rules of this law regards on advertising of the tobacco products. These rules are compatible with Directive related to the advertising and sponsorship of tobacco products as well as with ⁷ the Convention of the World Health Organization from 2003. Particularly, all kinds of advertising and sponsorships are prohibited, it is also prohibited giving tobacco products for free, i.e. all kinds of direct and indirect promoting of the tobacco products.

By the rules of the Law, also are regulated the cases of prohibition of smoking on the public events, in Health Institutions, in Institutions for education, in some hotels and restaurants, in the public traffic vehicles and some other public spaces, as well as in the working places. The points referred to defining, marking and the size of the space for smokers and the obligations for legal and physical persons are also considered according to that. In the developed countries the no smoking rule in the closed places is more rigid prohibited than in Montenegro.

The supervision of Inspection. The Law prescribes the competence of the sanitary, health, market, touristy, and educational inspector that supervises the usage of the rules of this Law. By these rules are prescribed the sentences for outrage and disrespect of the obligations prescribed by this law.

⁶ Council Resolution of 26 November 1996 on the reduction of smoking in the European Community, Official Journal C374, 11. 12. 1996, p. 0004-0005

⁷ Directive 98/43/EC of the European Parliament and of the Council of 6 July 1998 on the approximation of the laws, regulations and administrative provisions of the member states relating to the advertising and sponsorship of tobacco products, Official Journal L 213, 30. 07. 1998, p. 0009-0012.

Montenegro started with implementation of the Law almost years ago.. The Government Commission for smoking control in order to estimate how big was the contribution of this Law in the process of changing the behavior of the population prepared the realization of the survey that would include the largest possible number of Montenegrin population. Results of the surveys are not revealed yet. However, it is obvious that Law did not fulfill its goal since smoking at the public places is still evident.

IV Phase: Final recommendations

Unfortunately, we were not able to sum up all costs of tobacco use in Montenegro. In some parts we have done it, but in some parts we missed some data for calculation (for example, we could not get data from Health Clinic of Montenegro, regarding average daily cost for medical treatment of early-born and low weighted babies). Therefore, our recommendation would be to use this research as a starting point and then cooperate with relevant health institutions (for example: Health Clinic of Montenegro, Health Institute, Institute for Public Health etc.), in order to come up with the estimation of all economic costs of tobacco use in Montenegro.

Regardless of the fact that not all costs were calculated, survey has clearly shown that smoking causes significant negative costs. Furthermore, one of the recommendations would be stricter implementation of the Law on Smoking. Decreasing of smoking at public places would significantly reduce many of the economic costs of tobacco use. Moreover, in order to decrease costs caused by smoking, it is necessary to implement education on this topic as early as in primary school.

Conclusion

The importance of tobacco use as a global public health problem is indisputable. Tobacco use leads to poor health for those affected, to loss of productivity due to poor health, and to increased consumption of societal resources, especially in the health-care sector.

Tobacco use has a particularly severe economic impact on the developing world. Resources are relatively scarce in developing country contexts, and expenditures on tobacco consumption and tobacco-related illnesses compete in clear and often poignant ways with other social priorities. Moreover, the magnitude of the problem is increasing. Projected global trends show that developing nations are likely to experience by far the largest growth in tobacco consumption, disease and death over the coming two decades.⁸ The economic toll associated with this growth is likely to be significant, and can impede country development objectives. Therefore it is crucial that Montenegrin officials and relevant institutions recognize the significance of this problem, and in accordance to that undertake required tobacco control policies and interventions as soon as possible.

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⁸ The Economic Impact of Tobacco Use on National Health Systems, Societies, and Individuals, Research for International Tobacco Control

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ANNEX

Part of the Household Survey Questionnaire containing questions which are directly related to this project:

18.	Is any of your household members smoker? 1. Yes 2. No (go to section 2) 3. No, but friends/relatives smoke in residence	
19.	Do you think that your residence cleaning cost is higher compared to cost if there was no smoking in the household? 1. Yes By hHow much _____ (euros) 2. NoNe	
20.	How many times a year do you whiten your residence 1. At least once a year 2. Once in two years 3. Once in three years 4. More seldom	

SECTION 3: HEALTH

(To be completed by all household members or proxy respondent if unable to answer for themselves)

Id.	0.	1.	1b.	2.	3.	4.	5.	6.	7.	8.
	Interviewer note: ID no. of person answering if proxy	How would you rate your own health status? 1. very good 2. good 3. average 4. poor 5. very poor	Compared with your health one year ago, would you say that your health is: 1. much better now 2. somewhat better now 3. about the same 4. somewhat worse 5. much worse	Do you have disabilities? 1. Yes 2. No → 4	Does your disability limit your ability to work? 1. Yes 2. No	Do you have a child with special needs (slow development) TO BE ANSWERED ONLY BY HH HEAD 1. Yes 2. No	Have you ever smoked cigarettes on a regular basis? 1. Yes 2. No → 10	At what age did you start to smoke cigarettes on a regular basis?	Do you still smoke or have you totally quit? 1. Still smokes → 9 2. Quit	How long ago did you totally quit smoking? → 10
Id.	Code	Code	Code	Code	Code	Code	Code	Age	Code	Age
1										
2										
3										
4										
5										
6										
7										

Id	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19	11.	12.	13.	13a.	14.	15.	16.
	In one week, how many cigarettes do you smoke? (number of cigarettes, not packet)	Do you suffer from the respiratory system illness (chronic bronchitis, lung cancer)?	Do you suffer from coronary illness (angina pectoris)?	Do you suffer from cerebrovascular illness? (hypertension, stroke, etc.)	Do you suffer from peripheral vascular disease (pain in legs)?	Do you suffer from lung emphysema (reduced lung size)?	Were you away from the job due to some of the previously named illnesses in the past year?	How many days were you absent?	Do you smoke at work?	How many cigarettes do you smoke at work in one day?	Do you do physical exercise or play sports?	Do you exercise or play sports every week?	How many days do you exercise or play sports in a typical week?	Have you ever heard about diseases that can be transmitted through sexual intercourse?	If yes, for which one? (look on the bottom of the page, Q13)	What can people do to protect themselves from these diseases? (can circle more than one, Q14)	Are you covered by health insurance either directly or through another member of your household?	Why don't you have health insurance? (Specify)
	1. Yes Da 2. No Ne → 17	1. Yes Da 2. No Ne → 17	1. Yes Da 2. No Ne → 17	1. Yes Da 2. No Ne → 17	1. Yes Da 2. No Ne → 17	1. Yes Da 2. No Ne → 17	Specify the number of days	Specify the number of cigarettes	1. Yes Da 2. No Ne → 19	Specify the number of cigarettes	1. Yes Da 2. No Ne → 13	1. Yes Da 2. No Ne → 13	1. Yes Da 2. No Ne → 13	1. Yes Da 2. No Ne → 15			1. Yes → 17 2. No	→ 19
	Num. of cigarettes	Code	Code	Code	Code	Code	Code	Days	Code	Number	Code	Code	Days	Code	Code	Code	Code	Code
1																		
2																		
3																		

Q13. What disease have you heard of (can circle more than one): (circle all that apply):

1. Syphilis
2. Gonorrhea
3. Aids
4. Genital warts/condylomata
5. Other
6. Cannot remember names

Q14: Protection from diseases that can be transmitted through sexual intercourse

1. Have only one sex partner/reduce number of sex partners
2. Abstinence
3. Use condoms
4. Avoid sex with prostitutes
5. Seek medical treatment
6. Don't know
- 7. Other**

For respondents older than 15, female gender

Id.	1.	2.	3.				4.	5.				6.				7.				8.				9.
	How many pregnancies did you have by now? 1. None → section 4A 2. One 3. Two 4. Three 5. Four or more	How many born alive did you have by now? 1. None 2. One 3. Two 4. Three 5. Four or more	While in pregnancy did you: 1. Reduce smoking 2. Increase smoking 3. Stop smoking 4. Continue smoking as before 5. Never smoked before				How much your child weighted when was born? Specify the number ⁹	Did you have complications during pregnancy period? 1. Yes 2. No (go to section 4)				Were you hospitalized during pregnancy period? 1. Yes 2. No (go to section 4)				Was any of your children born with a disease? 1. Yes 2. No (go to section 4)				What disease? _____				Were you treated from sterility?
	Code		1.	2.	3.	4.	Kg	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	1.	2.	3.	4.	
1																								
2																								
3																								
4																								

⁹ If mother had more children, specify the overall average