Republic of Serbia
Fiscal Council

Investments in environmental protection: a social and fiscal priority

General assessment

The Fiscal Council sees a strong increase in environmental protection investment as a budgetary priority in 2019 and beyond. At the moment, Serbia is one of the most polluted countries in Europe - which puts the health of the population at risk, shortens life expectancy, decreases the quality of life and leads to uneven regional development. This situation is the result of, first of all, several decades of insufficient investments into landfills, wastewater treatment plants, sewers and water supply networks etc. Hence, the now overgrown problems require a strong increase in public investments. Increase in environmental protection public investments in the upcoming period is not only an indisputable need, it is Serbia's obligation as well. Namely, environmental protection is one of the fundamental principles of the EU - therefore, in the process of EU accession, Serbia is obliged to sharply increase investments in this field. Should it fail to do so and thus fail to comply with the standards until the expiry of the transitional period, it will pay hefty penalties. It is the opinion of the Fiscal Council that the public finances would have to face this issue without delay, i.e. that the 2019 budget should already allocate far greater funds for investments into environment. The circumstances for this are unusually favourable, as the budget for 2019 will comprise a sufficient fiscal space, provided by economic growth, decrease of public debt and the final payment of the debt of Srbijagas from the budget. However, if the Government uses this fiscal space for populist measures (excessive increase in salaries and pensions, subsidies and other non-productive expenditures) as has happened in the past (e.g. National Investment Plan in 2006) and is now, once again, being announced in public - a unique chance to resolve this dangerous and very expensive problem, while preserving the budget stability, shall be missed. Postponement of the inevitable environmental investments for some farther future could require far greater sacrifices (salary and pension freeze, tax increases) and would be implemented in far less favourable fiscal circumstances.

The necessary increase in budget expenditures for environmental protection amounts to about 1.2 to 1.4% of GDP (about 500 m Euros). Based on the available analyses showing the needs for the construction of wastewater treatment plants, drinking water factories, expansion of the sewers network, construction of regional sanitary landfills and waste treatment plants, disposal of "historical" and hazardous waste etc, we estimate the necessary public investment in environment in the upcoming ten years to be about 8.5 bn Euros. Translated into the annual budget, this would mean that the Government would have to increase annual expenditures for environmental protection by about 500 m Euros in the years to come. These additional funds are quite large, their order of magnitude matches the total expenditures for agriculture, or a third of the budget allocated to the Ministry of Education. The Fiscal Council's analysis, however, shows that

such an increase in environmental investments is more than justified and that this is the field that most of the fiscal funds should be directed to, at this time.

Improving health and the quality of life for the entire population is a justified fiscal policy priority. While studying the situation in environmental protection, the Fiscal Council reached some quite disturbing information. As a matter of fact, we have not seen such a catastrophic gap in any of the studies we have conducted thus far as we have observed in this field - not just compared to the developed countries of the EU, but also to the comparable Central and Eastern European countries (CEE countries). Drinking water in Serbia is of significantly lower quality than that in the comparable counties, almost no landfill meets the sanitary standards - hazardous substances leak from the landfills into surface waters and aquifers; in addition, the landfills are often subject to fires which produce very dangerous gases. In addition, practically all wastewater from the sewers is drained into surface waters without any kind of treatment, even in the largest cities (Belgrade, Novi Sad) which is inconceivable in EU countries. Finally, the system of air pollution control and reduction is almost completely non-operational; it is estimated that, at this time, about 2.5 million citizens live in areas with overpolluted air which comprises at least one pollutant at a level that can be considered hazardous for human health. The EU has also recognized these problems and the environmental protection is one of the accession negotiation chapters in which the gap between Serbia and EU standards is the largest. Therefore, the first and foremost reason why it is necessary that the Government should strongly increase its investments into environmental protection is the fact that the situation in this field is so bad that it endangers the health of the entire population of Serbia, shortening life expectancy and decreasing the quality of life of the citizens.

Increase in environmental protection investments would improve budget structures (larger public investments) and have a positive effect on economic growth in the short term. In addition to the importance of increased investments in environmental protection because of the health and quality of life benefits (which is certainly the top priority), there are also indisputable economic reasons why this should become a fiscal priority in the years to come. A comparative analysis shows that Serbia is currently not investing enough in environmental protection - a mere third of the funds that the comparable CEE countries are investing. Low public investments in this field are among the chief reasons why total public investments in Serbia are insufficient (public investments in Serbia amount to about 3% of GDP, while in other CEE countries they are over 4% of GDP). With an increase in environmental investments of an estimated 1.3% of GDP, Serbia would reach the CEE public investments average and thus significantly improve the structure of its budget. This change in budget structure towards an increase in public investments is very important, as public investments are budget expenditures of the highest quality with, by far, the greatest positive impact on economic growth (compared to current expenditures - salaries, pensions, subsidies). In other words, a large part of the necessary environmental investments in Serbia pertains to construction works that could be performed by domestic companies, with domestic equipment and materials (e.g. water and sewers pipes), generating a multiplication effect on the economy as a whole and accelerating economic growth. We estimate that an increase in investments in environment of 1.3% of GDP would accelerate Serbian GDP growth in the short term by at least 0.5%.

The numerous positive economic effects also include a more even regional development and a long-lasting incentive for economic growth of the entire country. Investments in environmental protection have a positive effect on long-term economic growth, as well as on a uniform regional development of the country. The necessary environmental investments are approximately evenly distributed between different regions (e.g. over 20 regional

sanitary landfills need to be constructed, over 350 water treatment plants throughout Serbia, etc.) and there are components that are mostly envisaged for less developed areas of Serbia (e.g. construction of sewers and water supply network). Such a regional distribution of public investments in environmental protection would also have an effect on a more even economic development of Serbia, as the investment works would be performed throughout the country. In addition, improvement in communal infrastructure (water supply pipelines, sewers, water treatment plants) is also important for the improvement in business climate, as better communal infrastructure leads to higher private investments and faster long-term economic growth. At that, decrease in pollution incentivises the development of certain industries, such as tourism, agriculture etc. Finally, a healthier environment reduces the costs of healthcare and increases the share of able-bodied population, which also has pronounced positive economic effects in the long-term.

There is currently fiscal space available in the budget that could be allocated for the resolution of this problem and this is a chance that should not be missed. Fiscal consolidation that started at the end of 2014 allowed Serbia to avoid a public debt crisis - from the annual general government deficit of 6.6% of GDP (2.2 bn Euros) in 2014, we have reached an approximately balanced budget in 2017 and 2018 and the public debt dropped from almost 75% of GDP to about 60% of GDP. The public finances in Serbia are now entering a somewhat calmer phase, but not only that - we are now starting to see additional fruits of the implemented fiscal consolidation. Due to the decrease in public debt, public expenditures for interests are decreasing at an accelerated rate. In the 2015 budget, interests accounted for 3.2% of GDP and we expect the expenditures for interests in 2019 to be decreased to about 2% of GDP. In addition to the decrease in public expenditures for the payment of interests on public debt, there are other additional positive effects of fiscal consolidation (for example, decreased budget expenditures for the payment of guaranteed debt of public enterprises etc.). We estimate that favourable fiscal trends will allow the Government to have, at its disposal, fiscal funds in the amount of 1% of GDP in the 2019 budget, which can be used to increase public investments in environmental protection. Therefore, the necessary increase in government environmental investments is, in general, possible without cutting public expenditures for other purposes or increasing taxes, which is a rare opportunity that the government should not miss.

The Government should not repeat the mistakes from the past, when favourable fiscal trends were used up for populist measures. The fact that the Government now has sufficient funds to significantly increase expenditures for environmental protection (where the need for investment is the greatest) starting from 2019, does not guarantee that this will actually take place. The current budget situation is quite reminiscent of the one from 2006, when, after the completion of the agreement with the IMF, the budget also had a surplus and the Government had, at its disposal, additional funds in the amount of 1.5 bn Euros received from the sale of Mobtel. This money, however, was then spent on populist measures - unsustainable increase in pensions and salaries in the public sector and on the National Investment Plan. Such an irresponsible policy led to quite a quick budget collapse, forcing a new round of austerity measures, but it also meant that a chance to resolve the country's enormous infrastructural issues was missed (including the construction of the necessary communal infrastructure). For example, ever since 2003 there have been plans and projects in place for the closing of the existing unsanitary city and municipal landfills, with the construction of new regional centres - but the priorities of the economic policies of the time laid elsewhere. In the meantime, the waste management problem escalated, and its resolution now requires significantly more funds. For these reasons, we emphasize once more, an increase in environmental investments in the upcoming years represents not only a justified priority, but also an inevitable necessity; if nothing else, it will be an obligation that Serbia will have to meet

in the process of EU accession. If the Government uses the existing fiscal space (which is unlikely to appear again in near future) on exaggerated increase in pensions and salaries in the public sector, it will yet again lead to the budget collapse. Furthermore, it could also mean that the inevitable environmental investments would have to be made in far less favourable fiscal circumstances. This would be significantly harder and would probably require some painful and unpopular measures (such as salary and pension freeze, tax increase, decreased budgets of the Ministries).

In addition to the increase in budget expenditures, a reform of local public finances and local public enterprises is also needed. The necessary increase in environmental investments of about 500 million Euros (1.3% of GDP) somewhat exceeds the available fiscal space (about 1% of GDP), so additional measures are needed to implement this increase. These measures pertain primarily to local government reform, as the Fiscal Council described in detail in its 2017 report ("Local Public Finance: Issues, Risks and Recommendations"). In short, local governments and local public enterprises (cleaning services, water supply and sewers etc.) are directly in charge of waste management, drinking water supply as well as wastewater treatment. This is why the local levels of government have to participate, both in operational and in financial terms, in order to implement environmental investments. However, due to the financial issues faced by the majority of local public enterprises and local governments in Serbia, this is not likely. Hence it will be necessary to consolidate the budgets of municipalities and cities (control of current expenditures, decrease of subsidies, better revenue collection) and restructure public utility companies (downsizing, increased revenue collection, increase in tariffs). We estimate that by implementing these measures, local governments could decrease their subsidies to the failing local public enterprises by about 100 m Euros (0.35% of GDP) and then direct these funds (together with the funds coming from the national budget) into investments in local public utility infrastructure - i.e. environmental protection.

National public enterprises, especially EPS, would also have to drastically increase their environmental investments - which means they need to undergo reforms. Environmental problems in Serbia cannot be overcome without active participation and investments from national public enterprises. Namely, the lists of major polluters in all fields of environmental protection inevitably contain public enterprises, and among them, EPS stands out in particular. Thus, EPS is the largest individual air polluter, the largest generator of industrial waste (ash), but also the largest generator of industrial wastewater in Serbia. The main reason for such stark statistics lies in the fact that EPS has not been investing nearly enough into environmental protection for years now; the cause lies in the company's many years of poor performance. Since it kept postponing the necessary investments, EPS now faces enormous obligations. EPS is obliged to invest about 650 m Euros in projects related to air quality protection alone; to meet all the necessary environmental standards, the company will require over a billion Euros of investments in the upcoming ten years. In order to implement these investments, EPS needs to finally reform its operation, which is a matter that keeps getting postponed (downsizing, accompanied by the improvement in employment structure; decrease in technical losses and theft, improvement in revenue collection, organisational weaknesses etc.). A lot has been said about the reform of EPS during the fiscal consolidation in the period 2015-2017 and it was meant to be an important part of the arrangement with the IMF at the time, but these reforms have not come far.

To increase environmental investments, systemic improvements in environmental management are necessary. A lack of investments is not the only issue plaguing environmental protection; an inadequate systemic framework for environmental policy management represents another. These two issues are interconnected. For example, increase in environmental protection investments is hardly possible if there is a lack of good project documentation and projects, which,

again, require an adequate number of engineers and experts for the development of these projects who could prepare the necessary documentation. The first systemic issue we would like to point out is the lack of staff at the general government level qualified for environmental issues. This pertains primarily to inspection work, experts for specific administrative tasks as well as the aforementioned engineers and project development experts. For instance, a comparative analysis shows that the number of environmental inspectors in Serbia is 2-3 times smaller than necessary for efficient monitoring and supervision; administrative capacities for transposition and implementation of EU Directives should also be increased two- or three-fold. Another important cause of the issues in environmental protection that we would like to point out is a severe segmentation of competencies in this field, which makes coordination more difficult and decreases direct responsibility for the implementation of measures and projects. In the field of environmental protection in Serbia at the present time, competencies are shared between different Ministries (Ministry of Environment, Ministry of Agriculture, Ministry of Mining and Energy etc.), different state agencies, public enterprises (primarily local public utility companies) and local governments. Our recommendation is to strive for greater centralisation of environmental projects.

Fiscal Council's report analyses the issues and the necessary investments in three separate fields: wastewater and water supply, solid waste management and air quality protection. The Fiscal Council's report comprises three sections dealing with specific challenges in the individual environmental sectors. In the first section, we looked into the issue of water pollution prevention, where there is an enormous problem of missing infrastructure – Serbia has almost no water treatment facilities and the sewers, as a rule, drain directly into surface waters. Due to the lack of infrastructure, the necessary investments in the water sector are by far the largest of all the analysed fields. In the same section, we also analyse water supply, placing particular emphasis on the problem of drinking water of inadequate quality. In the second section, we look at solid waste management. The largest part of this chapter is dedicated to the collection and treatment of municipal waste where the state plays the most important role; large investments into new regional landfills are also needed. In addition, this section points out the specific issues related to industrial and hazardous waste. Section three covers the air pollution prevention. Here, the main issue is the absence of a systemic framework for control and compliance with the mandatory EU standards. Finally, the report has an additional section dealing with financial and budget forecasts of the necessary environmental investments, as well as the systemic reform needed for a successful realization of the increased investments.

Water pollution prevention and water supply

Serbia has inherited water supply infrastructure, but it has been neglected, while wastewater treatment is not developed. In the water sector, we analysed two main areas - water pollution prevention and drinking water supply and concluded that both areas suffer from enormous problems. Even though water supply is formally not an environmental topic, we have included it here because of the importance of improving this public utility service and because of its connection to the environmental problems. In the water supply sector, Serbia has at its disposal infrastructure inherited - in a large part - from the second half of the twentieth century; however, this infrastructure has not been maintained or improved, so this sector is not performing well either. Main issues are poor water quality, high distribution losses and insufficient public access to central public water supply networks. Namely, over 40% of water supply networks in the country supply water which is not fit for drinking; more than a third of water is lost within the network as it travels from the water supply company to the end user, mostly because of leaks in the old pipes; access to

central water supply networks, even though it is somewhat better developed, is not available to a large portion of the population in certain parts of the country (mostly in the South and East). On the other hand, protection of water from pollution is a topic that is almost completely new and undeveloped in our country. There is practically no wastewater treatment infrastructure in Serbia, either for urban wastewater or for industrial wastewater, so less than 10% of waste water is treated, while the rest is directly discharged into rivers, polluting the environment and putting human health at risk. Contrary to Serbia, in the comparable CEE countries, about 70% of wastewater is treated, with the percentage increasing every year. Lack of wastewater treatment is partly the reason why only 7% of ground waters in Serbia are classified as "good" in terms of their environmental status and none are classified as "excellent". In addition, the sewers network in our country is not sufficiently developed either, bearing in mind that only 55% of the population are connected to the sewers network which collects wastewater and is a necessary prerequisite for the functioning of wastewater treatment plants. Improvement in water supply and protection infrastructure is needed primarily for the improvement in the quality of life of the population but also for meeting the standards dictated to Serbia by the EU in the accession process.

Infrastructure in the water sector requires by far the largest public investments compared to other analysed sectors, almost 6 bn Euros. Bearing in mind the unsatisfactory state of Serbian water infrastructure, it is no surprise that this field requires major investments and it seems that these investments will be the largest compared to other sectors. According to the latest estimates, total public investments in this field will amount to approximately 5.8 bn Euros. Of these, 4.3 bn Euros pertain to the protection of water from pollution and 1.5 bn Euros pertain to water supply. In terms of water protection, the largest investments will be needed for the expansion and rehabilitation of the existing sewer network (2.5 bn Euros) and the construction of wastewater treatment installations will probably cost 1.3 bn Euros. Considering the scope of these projects, the preparation of project documentation could mean additional costs in the amount of almost 500 million Euros. In the water supply sector, similar to water protection, the majority of funds will be needed for the investments in the network, i.e. its expansion and rehabilitation (over 800 m Euros). At that, it is estimated that the rehabilitation of the existing and construction of new water treatment facilities will cost about 600 million Euros and the necessary investments into new and existing drinking water sources will cost about 100 million euros.

Sewers network in Serbia is not sufficiently developed in practically any part of the country. The development of the sewer network is an important problem related to wastewater treatment, because sewers collect wastewater and transport it to wastewater treatment plants. However, in addition to not having nearly enough wastewater treatment capacities, Serbia also does not meet the prerequisite for their functioning - the existence of a well-developed sewer network. Namely, only 55% of the population in our country have access to the public sewer system (60% of the households) while in comparable CEE countries this system is available to 84% of the population. The population with no access to the sewer system uses only basic septic tanks (3.1 million inhabitants compared to the total Serbian population of 7 billion). The highest ratio of population connected to the sewers network is in large cities: Belgrade (in central city municipalities, over 90%), Novi Sad, Niš and Kragujevac (80-85% in all three cities). However, already suburban municipalities near major cities show insufficient connection rate - e.g. in Mladenovac, 45% of the population are connected to the sewers, 40% in Obrenovac and about 15% in Sopot. It is similar in other smaller municipalities, where the sewer connection rate usually varies in the range 15-40%. For instance, in Inđija, 43% of the population are connected, 33% in Trstenik, 20% in Ub etc. In some smaller towns, however, there is no sewers connection available at all (Kovačica, Plandište, Temerin, Titel, Žitište, Osečina, Crna Trava).

Due to its very low level of development, the sewers network is planned to be extensively expanded and it will be the most expensive environmental protection project. Bearing in mind the low number of connections to sewers, the huge gap between Serbia and other comparable CEE countries but also the requirements of the European Union, a major expansion of the sewer network will be necessary. According to some official assessments, the existing 14,800 km of the sewers network need to be expanded by about 10,400 km (which is a 70% expansion), which will take about 2.3 bn Euros. This is the most expensive investment in the entire environmental sector. The greatest need for network expansion is in those regions where the rate of connection to the sewers is the lowest, primarily in Vojvodina, where additional 4.800 km of the network should be constructed. With these funds, needed for the construction of a new sewer network, it is estimated that additional 250 million Euros will need to be allocated to the necessary rehabilitation of about 1000 km of the existing network. The plans for network restoration are the most extensive in the region of Šumadija and Western Serbia, about 400 km, in Vojvodina, as well as South and East Serbia with 250 km each (500 km in total), while a little over 100 km planned for Belgrade.

Only a minute quantity of urban wastewater is treated in an adequate way in Serbia, while large cities have no wastewater treatment at all - contrary to the European practice. Unlike other countries of the CEE, in which about 70% of urban wastewater is treated, the situation in this field in Serbia is quite devastating. Although the official data from the SORS show that 12% of wastewater from settlements is treated, government's data show that less than 8% of urban wastewater is treated in an adequate way. At that, even the largest cities in Serbia such as Belgrade and Novi Sad have no wastewater treatment plants, so the entire content of the sewers is discharged directly into Sava and Danube. There are no cities of similar size in the EU without wastewater treatment plants, e.g. Budapest treats 95% of the wastewater using the best available techniques, Bratislava 99% and Vienna 100%. Even Bulgaria and Romania, which rank the lowest in EU in this field, treat a major part of the wastewater produced in their capital cities - Sofia 75% and Bucharest 60%, both using the best available techniques. In addition, we would like to note that the comparable countries, even though they do not treat all of their urban waste water, are improving their infrastructure year in, year out.

In Serbia, treatment of urban wastewater using best available techniques will probably be necessary - i.e. using the so-called tertiary treatment. There are three levels of wastewater treatment - primary (the weakest), secondary and tertiary (the best) and each is precisely (quantitatively) defined in EU directives and national legislation. In the European Union, the secondary treatment is the minimum requirement in the majority of cases, while the so-called sensitive areas require the third level of treatment as mandatory. Sensitive areas encompass all waters for which it is of vital importance to minimize pollution, such as sources of drinking water, sources of overly polluted water etc. Serbia will probably be treated, for a dominant part of its territory (or perhaps even for its entire territory) as a sensitive area due to the great need to decrease pollution of the Danube in Romania and the fact that 92% of our territory belongs to the Danube basin. Some comparable countries are already treating their entire territories as vulnerable areas: Czech Republic, Estonia, Lithuania, Latvia, Poland, Romania and Slovakia.

At the moment, four wastewater treatment plants treat wastewater at the tertiary level; another 350 installations need to be built. Of a total of 39 municipal wastewater treatment plants in Serbia, only four plants allow for the tertiary level of wastewater treatment (Maglić - Bački Petrovac, Pećinci, Senta, and Subotica). In addition, 22 plants afford secondary level treatment, 8 are completely non-operational, 4 have some technological processes that are non-operational or have insufficient capacities and one plant is operational but is treating wastewater

only at the primary level. According to the latest plans, around 350 wastewater treatment plants need to be built in Serbia, most probably for the tertiary treatment, for 400 agglomerations (inhabited areas). Of those, four largest agglomerations (Belgrade, Novi Sad, Niš, Kragujevac) would treat by far the largest share of the total urban wastewater, about 42%. The total value of these projects is estimated to about 1.3 bn Euros. Absence of wastewater treatment is probably one of the greatest environmental problems in Serbia, so we estimate that it is necessary that the government (at the level of central and local government, as well as through local enterprises) starts investing funds in the development of project documentation already in 2018.

Industrial wastewater is not treated adequately. Industrial wastewater is the most hazardous type of wastewater as it can contain different types of toxic substances. We studied industrial wastewater treatment using the data from Batut's reports, analysing individual installations and their wastewater samples, as well as the official data from the SORS looking at wastewater quantities. Namely, according to SORS data, of the total *quantity* of industrial wastewater, 42% is treated (not counting the wastewater from EPS that was used for cooling in the process of producing electricity; this quantity is too large and would confound the overall picture for the remainder of the business sector). At that, the treatment is mostly at primary level, which is insufficient; only 10% of industrial wastewater is treated by secondary and tertiary treatment. In addition, the data from the Institute of Public Health Batut shows that 57% of the analysed industrial *installations* have no wastewater treatment facilities and this situation has remained the same in the last three years (2015-2017). Further, about 50% of the *samples* of industrial wastewater failed to meet the standards on wastewater quality prescribed in the Ordinance on emission limit values of polluting substances in surface and groundwaters.

In the industrial wastewater segment, the role of the government is mostly concerned with control and responsibility for the performance of public and state-owned enterprises, while the majority of investments should be made by the private sector. Considering that every installation that discharges industrial wastewater should have its own wastewater treatment plant, it is clear that the private sector is the one to bear the cost of the majority of investments in this segment of water protection. In this field, the role of the government is to establish a system to prevent harmful industrial wastewater from entering rivers (directly or through the sewer network) - to prescribe the emission limit values, issue environmental permits, control and, if necessary, fine. In addition, the government is directly responsible for state-owned enterprises whose wastewater pollutes the surface waters. Specifically, there are cities with a pronounced problem of untreated wastewater, which also have some non-privatized state-owned enterprise (e.g. Pančevo with Azotara and Petrohemija) - and these issues are probably related. This is yet another reason (together with poor performance and budget support for these enterprises) why it is necessary for the government to privatize the enterprises that can be privatized, obliging the future owner to comply with all applicable environmental standards. Enterprises that cannot be privatized should be allowed to undergo bankruptcy, so that they no longer burden the budget and harm the environment.

One of the consequences of the lack of treatment of urban and industrial wastewater is the poor surface water quality in Serbia. In terms of ecological status, only 7% of water in Serbia can be classified as good and none can be classified as excellent. In Europe, on average, about a half of surface water are classified as good and excellent in terms of their ecological status. This is one of the consequences of discharging urban and industrial wastewater directly into the rivers and the most obvious one. In addition, the unregulated waste management system and a large number of unsanitary landfills and dumpsites for municipal waste, as well as the inadequate disposal of industrial and hazardous waste near surface water contribute to the pollution of rivers;

the use of nitrogen-based fertilizers in agriculture, river water traffic etc. should be added to this list. In addition to the poor environmental status, another quality indicator for water is its chemical status. In Serbia, 80% of water is of a good chemical composition, matching the EU average. It is not, however, known what exactly the sources of chemical pollution are, but it is possible that Serbia is lagging behind Europe in this respect as well, since we are a less industrialized country and the pollution in our country is generally lower.

The Great Bačka Canal is a large and urgent environmental problem and also an example of the difficulties in resolving the issue of surface water pollution. The Great Bačka Canal (GBC), a part of the Danube - Tisa – Danube Canal, was once a part of the river traffic network, and now it is no longer navigable due to its high pollution. This extreme pollution spills over to Tisa and Danube and is thus transported on. With over 400,000 meters cube of contaminated sludge and contaminated water, the GBC is estimated to be the most polluted waterway in Europe. Sources of GBC pollution are the municipal wastewater, but also the numerous industrial installations in the vicinity. Due to the catastrophic environmental status of the GBC, the Ministry of Environmental Protection of Serbia has declared it one of three black spots of Serbian environment (together with Pančevo and Bor) in 2008. At that time, a project was elaborated (45 m Euros) for the construction of the Vrbas-Kula collector for municipal and industrial wastewater, construction of a central wastewater treatment plant in Vrbas and cleaning (desludging) of the GBC. Even though ten years have passed since the first efforts to resolve this problem, the project is not complete. Namely, after the construction of the central wastewater treatment plant, there was an issue with an insufficient quantity of wastewater as Vrbas and Kula's sewers are insufficiently developed. GBC cleaning has not even started; the latest in the line of emerging problems is the issue of a safe location for the disposal of the contaminated sludge.

Drinking water quality in Serbia is often not good and this, in our opinion, is the worst issue in the water supply sector. Different sources indicate that the water from the public water supply system in Serbia is often of poor quality, with the issue being the most pronounced in Vojvodina. The problem of poor water quality exists both in urban environments as well as in rural areas - in rural areas, as a rule, the situation is worse. According to the reports from the Institute of Public Health Batut, in 2017 56% of city water supply systems had drinking water of adequate quality, while the remaining 44% provided water of inadequate quality, whether in terms of physical-chemical properties (12%) or microbiological properties (18%) or both (14%). A slight improvement has been noted, since the percentage of water supply systems with good water increased from 49% in 2010 to 56% in 2017, but the progress is modest, especially since the numbers have been stagnating at 55-60% in the last three years. In rural water supply systems, the situation is even worse on average - and these supply water to about a million of people. Firstly, these water supply systems are not controlled often enough and secondly, each analysis shows that the quality is worse than in urban areas - in the villages, a mere 37% of water supply systems supply water of adequate quality (20 p.p. less than in urban areas). In as many as 73% of water supply systems the water is not chlorinated often enough, many chlorinators are out of order and therefore, chlorination is sometimes impossible. Due to the use of drinking water of inadequate quality, hydric epidemics often appear in rural areas, as has been observed regularly, at least once a year in the last 15 years.

Poor quality of water in rural water supply systems is not surprising bearing in mind the other issues faced by these water supply networks, which is why they should be handed over for management to the local water supply companies. The exact ownership is unknown for 88% of rural water supply networks, in 66% of the cases they are managed by non-qualified staff, 55% fail to meet technical requirements, in 73% of the cases the springs are not fenced off

and are subject to animal contamination, 64% are potentially endangered by the nearby outhouses, sewers, traffic, industrial pollution etc. Due to all the issues present in rural water supply systems, it would be preferable if they were to be managed by the respective local water supply companies.

About 35% of the produced drinking water is lost annually, mostly due to the age of the pipes. Out of the total quantity of drinking water produced by the water supply systems in Serbia, 35% gets lost and only 65% reaches the final buyers, with the situation getting worse over time (in 2005, the losses were at about 27%). The aforementioned 35% encompasses all water not invoiced (non-revenue water), for any reason. It mostly pertains to water that leaks out through the distribution network, never reaching the end users, but it also includes theft, i.e. illegal connections to the network and water use not registered by water meters. Such losses exist in all countries but are, as a rule, far smaller. Smallest losses are recorded in the Netherlands (5%), Germany (7%) and Denmark (8%), while comparable countries have losses at about 20% - Poland (15%), Czech Republic (17%), Hungary (20%), Slovakia (26%), Slovenia (27%). Of CEE countries, only Romania has higher losses than Serbia (38%). Since some countries do not issue invoices for water used for the cleaning of streets or for water used by the fire department, it is impossible to directly compare losses between countries, but in any case, a loss exceeding one quarter (25%) is considered too high. Serbia has exceeded that threshold by far.

Access to public water supply, on average, is the only indicator not extremely poorly ranked compared to other CEE countries, but even here, there are parts of the country with unsatisfactory access. According to the official data, about 85% of Serbian population has access to public water supply, which is quite comparable to CEE countries where, on average, 86% of the population is connected to the public water supply network. A relatively good access to the water supply network is owed, to a great extent, to the inherited infrastructure and investments made during the second half of the twentieth century. In addition, the rate of connections to the water supply network has increased from 76% in 2002 to 85% now, but primarily due to migrations from rural to urban areas, not due to the expansion of the network. In Vojvodina and Belgrade, the rate of connection is high (95%), but in some parts of the country it is very low - e.g. in Nišava region, where it is at 50% and Toplica region where it is at 62%. The issue of the low rate of connections to the water supply network in certain areas is related to the issue of rural water supplies with unidentified ownership, since these kinds of water supplies are usually found in those parts of the country in which the official statistics register a low rate of connections to the centralised water supply network. We also emphasize that there are problems due to insufficient quantities of water available, despite the satisfactory rate of connection to the water supply network (in Čačak, Požega, Gornji Milanovac, Bor, Požarevac, Veliko Gradište, Lazarevac) and also with both the quantity and the quality (in Zrenjanin, Kikinda, Kraljevo, Ćuprija).

Waste collection and treatment

Problems in waste collection and treatment are enormous, additionally exacerbated by the many years of irresponsible behaviour by the government. Poor waste management is perhaps the most visible and most widely distributed environmental problem posing a serious threat to human health. Only 80% of municipal waste in Serbia is collected in an organized manner, unlike in comparable CEE countries where this indicator is over 95%. The remainder ends up in around 3,500 illegal landfills in Serbia, many located close to inhabited areas and water sources, representing a major hazard for human health. Even the collected waste is usually not disposed of in a safe manner (70% of the collected waste is deposited in landfills that do not meet sanitary standards). Waste treatment (recycling, controlled incineration, composting) is poorly developed

so all municipal waste collected in Serbia is deposited at landfills, unlike the comparable CEE countries in which only 50% of the waste is disposed of at landfills while the rest is treated (at EU level, 75% of the collected waste is treated). Similar to municipal waste, industrial waste in Serbia is predominantly not treated (e.g. ash from EPS) and, in addition, the systems for documentation and control of industrial waste are also underdeveloped. The most alarming point here is the undeveloped system for controlling hazardous industrial waste streams, so there are frequent examples of improperly disposed toxic waste being discovered throughout Serbia. In addition to all these current problems, we should also mention the historic waste, originating mostly from former state-owned and socially-owned enterprises. The government has recognized the majority of these enormous problems long ago, so several waste management strategies have been adopted since 2003. However, apart from adopting strategies, there has been almost no practical progress. The main reason, by all accounts, seems to be that waste treatment has never ranked high on the priority list, of any Government in the last 15 years. So, even in situations in which the general government did have sufficient funds at its disposal and when strategies and plans for the regulation of waste management systems were in place, other projects were given priority (e.g. NIP in 2006).

To resolve the accumulated problems with poor waste management in Serbia, investments of about 1.5 bn Euros are needed. Since waste management issues are so widely spread, to resolve this problem - in addition to the urgent removal of the waste posing a hazard to the health of the population (illegal landfills, historic and hazardous industrial waste), the government also needs to invest in almost all phases of waste collection and treatment, i.e. in the construction of new infrastructure (regional landfills, treatment installations), in equipment (waste segregation containers, trucks) etc. The largest investments, of about a billion Euros, need to be made in the municipal waste management system which is by far the largest and most complex. First of all, this encompasses the closure of over 160 unsanitary municipal landfills, accompanied by soil remediation, and investments into the construction of about 20 new regional landfills together with waste treatment facilities. Resolution of the historic waste problem and illegal landfill problem is estimated at about 300 million Euros, while additional public investments in the total amount of about 200 million Euros are needed to resolve the problems of mining waste, special waste streams (batteries, car batteries, electronics etc.) and others.

A waste management system that will be sustainable in the long-term needs to be established. The analysis of the Fiscal Council showed that there were numerous systemic flaws in waste management. One of the main issues is the inadequate number of staff, in particular in inspection services (which are also too decentralized). This is why the waste stream control is at an alarmingly low level. In addition, the penal policy also needs to be reconsidered, both in terms of fines for irresponsible behaviour of individuals and for enterprises. Due to the inadequate penal policy and poor control, certain enterprises (with little risk of being discovered in the first place) find it more profitable to pay fines for improper waste disposal than to dispose of their waste safely. In addition, local public enterprises responsible for waste management (city cleaning companies) often have losses and are surviving solely on subsidies they get from local governments. Financial problems of local public enterprises then also reflect on the ability to successfully perform their basic functions. Finally, among the systemic issues, we would like to point out that not only were the existing waste management strategies unimplemented, but have in the meantime become obsolete, i.e. they are no longer in line with the EU Directives in force. Hence, in parallel to improving the waste management system, a new long-term strategic framework needs to be developed, allowing the government to define its objectives and the manner in which it plans to fulfil them.

The Fiscal Council separately analysed the specific issues in the management of different types of waste - municipal, industrial and other types of waste. We have divided the waste management analysis into several sections, by individual waste category. We have devoted most attention to the management of municipal waste, where the role of the government is the most comprehensive and the necessary public investments are the largest. The second part of the analysis looks into industrial waste which, in specific cases of high toxicity (hazardous waste) can represent a severe hazard for human health. Role of the government in industrial waste management, for the most part, pertains to control. In addition to these two largest sections, we also present the issues and recommendations pertaining to construction, healthcare, packaging waste and special waste streams that require special treatment (used batteries, electric and electronic appliances, end of life vehicles, waste oils, tyres etc).

Collection and treatment of municipal waste is the most complex waste management segment and it is not properly managed in any of its phases. The system of collection and treatment of municipal waste is the most comprehensive and most complex segment of waste management. Good management of this system includes efficient implementation of several related activities: 1) organized collection of all waste generated by households, as well as those businesses that dispose of their waste using municipal waste containers, 2) treatment of the largest share of the collected waste (recycling, composting, controlled incineration) and 3) disposal of the remaining quantities of municipal waste (after treatment) in an environmentally safe manner. However, none of these processes functions well in Serbia, which represents a serious risk for the health of its population. To resolve this issue, a coordinated engagement of the government, local governments and public utility companies is needed, together with major investments in the development of new infrastructure.

The existing landfills need to be removed and the emergence of new illegal landfills needs to be prevented. A significant number of households is not encompassed by the organized municipal waste collection system (it is estimated that about one third of households are not covered, mostly in rural areas), so about 20% of the generated municipal waste is not collected in an organized manner. At that, the population is insufficiently aware of the hazards of disposing waste in nature, which, together with inefficient control by the competent authorities and inadequate penal policy, leads to improper disposal of large quantities of municipal waste. This is why, in Serbia, according to the official estimates, there is about 3,500 illegal landfills (unofficial assessments put this figure even higher). Such landfills present a direct threat to human health - they are frequently located next to urban areas, water stems and springs. However, to resolve this problem, it will not be sufficient to simply remove the existing landfills. A far greater task is in regulating the system so that the illegal landfills no longer emerge. This means that the system of waste collection needs to be improved by improving the performance of local public enterprises charged for this task - meaning their reorganisation, accompanied by laying off the surplus staff, improving revenue collection, reconsideration of their price policy etc. - but also, it means significant investments into equipment and vehicles (new containers, specialized trucks for waste removal etc.). Since it is not very likely that the local public enterprises, which often suffer from poor performance or operate at the very edge of profitability, will be able to provide the funds needed for these investments themselves, we believe it is justified that the funds should be provided by local governments or, if need be, the central government itself. In order to find a permanent solution for the issue of illegal landfills, the reform of local public enterprises and investments have to be accompanied by a stricter penal policy and intensified control by the inspection services.

The greatest challenge will lie in resolving the issue of unsanitary municipal landfills. A truly devastating fact is that, at the moment, in Serbia, there is almost no difference whether the

waste ends up in an illegal landfill or the public utility company disposes of it at one of the city or municipal landfills. Namely, there are over 160 unsanitary (official) landfills in Serbia that are, in most cases, very old, with their capacities filled, which leech very harmful wastewater (about 20% of them are located less than 1 km from a water source used for drinking water supply). Due to the catastrophic conditions of the city and municipal landfills, it is quite frequent to see landfill fires that are very difficult to extinguish. So, for example, in 2017 alone, there were several dozen landfill fires (Belgrade/Vinča, Novi Sad, Odžaci etc.) which also, often for a long time, produced toxic smoke that could pose a threat to human health. Unsanitary municipal landfills are probably the largest systemic problem in municipal waste management, spread out practically over the entire territory of Serbia. Hence, the resolution of this problem is key to bringing the entire municipal waste management system in line and requires a direct involvement of the government.

Systemic resolution of the issue of non-engineered landfills means that they should be closed, the soil remediated and new, regional engineered landfills that meet the European environmental standards should be opened. As we mentioned, the resolution of non-engineered (unsanitary) city and municipal landfills that are hazardous for human health require a systemic approach with direct government involvement. The government recognized this issue over fifteen years ago but has not come far in its resolution. The main part of the first national waste management strategy (adopted back in 2003) was the construction of 29 regional waste disposal and treatment sites - as a substitute for the existing non-engineered landfills. However, practically nothing has been done to implement this strategy. In the meantime, another strategy was elaborated (2010-2019) which, although somewhat more comprehensive, was also based on a very similar plan of regional municipal waste management (except the number of regional landfills was decreased to 27).

Establishment of regional centres turned out to be problematic for several reasons. Even though the two detailed strategies called for the construction of 29/27 regional centres for disposal and treatment of waste, in practice, only 8 regional landfills are currently operational - and all of them suffer serious operational problems. At that, none of the constructed regional landfills meet all the ascertained needs (e.g. the systems for waste segregation and treatment are not developed; there is leachate that discharges into water streams etc.). Slow development of the regional centres is a consequence of numerous weaknesses that have appeared throughout this process. *Firstly*, regional organisation is difficult, as municipalities find it hard to agree on financial participation, management of the future landfill, its location etc. *Secondly*, the development of project documentation was often problematic due to a shortage of expert staff and/or insufficient research. *Thirdly*, the process of construction itself was often prolonged due to poor planning/lack of funds, unresolved property issues etc. *Fourthly*, even after being commissioned in the pilot phase of operation, it would turn out that the landfills required additional investments to become operational, which required both financial resources and time. So, it would seem that the entire process needed better organisation, coordination of the local governments, but also their stricter control and, we believe, higher financial investments from the central government.

Municipal waste treatment is not satisfactory - the majority of the collected waste in Serbia is simply disposed of without any kind of treatment. EU Directives pay increasing attention to the treatment of the collected waste (recycling, composting of biodegradable waste, controlled combustion with heat-to-energy production), so the percentage of waste being treated in the EU increases from year to year. Currently about 75% of waste is treated at EU level, and there are countries in which almost all collected waste is treated, i.e. in which almost no waste ever ends up in the landfills (Sweden, Denmark, Belgium). For Serbia, the CEE countries are certainly more relevant for comparison than the aforementioned countries; they, too, have made significant

progress in waste treatment in the previous decade, so they treat on average about 50% of their waste. Unlike in comparable countries, primary waste separation in Serbia is not developed and waste separation facilities are only available at a few landfills; there are no installations in Serbia for (environmentally sound) incineration of waste or its composting. Therefore, Serbia has the worst municipal waste treatment in Europe (together with Macedonia and Bosnia and Herzegovina). To improve municipal waste management and harmonize with the applicable EU Directives, waste treatment facilities should be built at each regional landfill. This process would be more cost effective if the planned system of regional landfills was to be a little less decentralized, with the number of planned landfills reduced to about 20 (in places where construction has not yet begun). This is the reason why the existing plans and Waste Management Strategy need to be revised.

Industrial waste streams are not adequately controlled by the Government, which leads to hazardous industrial waste often ending up in unsafe locations. Unlike with municipal waste, where the government has a direct responsibility for its collection and disposal, the role of government in industrial waste streams is primarily that of control. Industrial waste generators should bear the costs of waste collection, transport, treatment and disposal and, at that, are obliged to pay an environmental fee to the budget (compensation for the waste generated or disposed of, the amount of which depends on whether the waste produced is hazardous or non-hazardous). However, in practice, this system is not working well. First, the enterprises themselves are motivated not to report accurate quantities of the generated industrial waste (which is their legal obligation). On the other hand, the government doesn't have sufficiently developed control mechanisms, or sanctions for such behaviour (in some cases, the fines are lower than the costs of safe industrial waste disposal). The first direct consequence is that the revenues from fees are somewhat lower - and assuming a well-regulated system, these revenues could serve as an additional source of funding for the necessary investments into environmental protection. A greater and more dangerous problem, however, is the inadequate control of waste streams, especially of the hazardous industrial waste. Here, it transpired that the companies generating hazardous waste were not the only parties acting irresponsibly - the companies authorized for hazardous waste management also shunned their responsibilities (companies paid for safe disposal of hazardous industrial waste). There are cases where hazardous waste was simply buried, after being collected from the waste generator, instead of proper handling (interim storage or export). In the last six months, we have seen increased discoveries of hazardous waste burial sites, such as the examples near Novi Sad, Pančevo, Obrenovac. Frequent discoveries of the improperly disposed hazardous waste are a good indicator that the central government should increase its efforts in regulating this field, but these efforts have to be kept up until the problem is entirely resolved. In addition, it is also important to improve the mechanism of prosecution and sanctioning of those who breach the law.

Neglecting the issue of industrial waste now puts the central government before a demanding challenge of resolving the issue of the accumulated historic industrial waste. Many years of inadequate control by the central government and the downfall of numerous state-owned former economic giants lead to significant quantities of industrial waste being for years improperly disposed of within factory grounds. Although many such factories have been closed for many years now, the problems of their accumulated waste persist. Therefore, we have large quantities of historic industrial waste (the estimated figure is 100,000 tons, but detailed data on quantities and contents are not known), which is often comprised of very harmful chemicals. Collection of this waste, as well as the collection and remediation of the contaminated soil, should be organized and funded by the government and the estimated costs run as high as 250-300 million Euros. Some of

the riskiest and therefore most urgent cases are industrial zone in Šabac (Zorka), Viskoza from Loznica, Lateks from Čačak, other factories like IMT in Belgrade, EI in Niš etc. In addition to all of the above, there are companies undergoing privatization with a larger or smaller quantity of accumulated industrial (hazardous) waste, which the government has to manage prior to privatization, as its legal obligation. Although these companies are already operating in a non-sustainable manner (e.g. Azotara), an additional reason to resolve their fate as soon as possible lies in the accumulation of industrial waste, which is expensive to manage - and the cost of its disposal will eventually fall to the state budget.

In the upcoming period, it is necessary to establish and develop a system for reuse of industrial waste. According to the available data, the majority of industrial waste comes from thermal processes (such as fly ash, shale and sludge), and the largest generator is the public enterprise EPS. Even though it has been a part of international practice (for over 50 years) to reuse this waste as material in construction and cement industry, this practice has not yet been established in our country. The first legal obstacle (recognition of ash as a raw material) was removed in 2015, with the adoption of the Ordinance on the use of ash in construction and road construction; however, in practice, not much progress has been made. Since there are large quantities of such waste available (estimated at 200-250 million tons with 6 million tons additionally produced every year), this issue calls for a responsible approach.

If we are to establish an efficient waste management system, we must not forget adequate treatment of specific waste categories. Specific waste categories include those types of waste which require special treatment procedures - healthcare, construction, packaging waste and special waste streams (batteries, car batteries, electric and electronic devices, vehicles etc.). In previous waste management strategies, emphasis was on municipal waste as the consequences of poor organization in this segment are easiest to see. Less attention was given to individual specific waste categories, but this issue has been gaining prominence in recent years. Certain progress has been made, especially in the management of packaging waste, but that progress is insufficient considering the magnitude of the problem and the international standards that we aim to achieve. It is necessary to establish management systems for packaging waste and special waste streams (batteries, car batteries, electrical devices, end of life vehicles etc.) that will be sustainable in the long-term. Namely, the main objective is for as much generated waste as possible to be re-used or disposed in a manner that will not represent a threat to human health. At that, it is also necessary to allow for a maximum possible rate of re-use of construction materials. This type of waste usually ends up discarded at one of the illegal or non-engineered landfills, while it is estimated that 80% of it could be re-used. We also would like to note that construction waste recycling is considered one of the priorities in an efficient waste management system and in EU this type of waste is used for major capital projects such as road construction, bridge construction etc. Finally, although the treatment of medical waste exists in Serbia, it is insufficient, and the existing equipment will soon need renewing, so this is probably a good time to for a strategic review and decision on the future method of managing this type of waste.

Air pollution and protection in Serbia

Due to several decades of total negligence of air quality, at least a third of Serbian population is now exposed to excessively polluted air. The quality of the air we breathe is one of the most neglected environmental fields, for the government has failed to show any strategic commitment to air protection and the reduction of air pollution for decades. Official data indicate that, at this time, about 2.5 million citizens live in areas with excessive air pollution, with at least

one pollutant at a level that can be considered hazardous for human health. The already well known "black spots" are some of the largest cities in Serbia - Belgrade, Kragujevac, Pančevo, Bor, Valjevo, Užice, Smederevo, Subotica and Sremska Mitrovica. However, there are sound indications that this environmental problem is even wider. Non-systemic measurements that are not used for official assessments indicate that the quality of air is alarmingly low in Niš, Čačak, Sevojno and Kosjerić, while reliable data on air quality is missing for many large cities and industrial centres where almost a quarter of Serbian urban population lives (e.g. Novi Pazar, Leskovac, Vranje or Pirot). Taking into consideration geographic and climate properties and the frequency of the common sources of pollution in these cities, there is no doubt that their population is exposed to harmful effects of air pollution as well. In other words, the official data on (the lack of) air quality most likely provide just the minimum number of potentially endangered citizens. Comparative analysis shows that in the previous 15-20 years, little or nothing has been done to improve air quality. Namely, at the beginning of the century, Serbia was quite comparable to Central and Eastern European countries by the emissions of pollutants into the air (per capita), while today it is among the worst ranked. While other countries have on average halved their emissions, in Serbia emissions have either remained the same or have increased, depending on the type of pollutant. According to the last available data for 2015, emissions of sulphur dioxide per capita were by 350% higher in Serbia than CEE average, suspended particles by about 70%, 30% for nitrogen oxides, carbon monoxide and organic substances.

Polluted air has devastating consequences for the health of the population and Serbia is already paying a high price for this negligence. Excessively polluted air has been recognized world-wide as one of the greatest environmental health risks; it is estimated that it takes a toll of 400,000 premature deaths in Europe each year. Namely, an increasing number of medical studies confirm a correlation between poor air quality and the prevalence of different respiratory, cardiovascular and malignant diseases, with children and the elderly most at risk. The latest results show that exposure to elevated concentrations of solid particles and nitrogen oxides, even prenatally, can increase the risk of numerous chronic illnesses appearing later in life: reduced respiratory function, asthma and other respiratory issues, obesity, diabetes and malignancies (e.g. breast cancer and prostate cancer). However, there is not enough awareness of this causal link in Serbia and this topic is seldom discussed in public. There is almost no relevant national research on the impact of excessive air pollution on the health of the population, but there are international studies that also contain estimates for Serbia - and their conclusions are alarming. The European Environmental Protection Agency, in its report on air quality in Europe in 2017, estimated that at least 10,000 people do not live out their life expectancy in Serbia because they breathe air that is excessively polluted with particulate matter, nitrogen oxides or ground-level ozone. It also turns out that Serbia is among the countries with the greatest risk in Europe when the number of lost years of life is considered (compared to the entire population). The number of premature deaths due to pollution is certainly the most dramatic indicator, but it is only one part of the price we pay. Increased incidence of different illnesses reduces the quality of life of the population, increases healthcare costs and decreases the productivity of the workforce.

Activities in three sectors have the decisive influence on the poor quality of air in Serbia - energy, industry and traffic. By far the largest air polluters in Serbia come from the energy sector - thermal power plants and city heating plants, while in local communities, significant pollution also comes from public institutions and households that have their own boiler rooms or furnaces. EPS's thermal power plants alone produce 95% of the overall emissions of sulphur dioxide and over 50% of the emissions of nitrogen oxides, while the energy sector in a wider sense takes the lead in the emissions of other pollutants, as well. There are many reasons for this:

dominant reliance on coal in the production of electricity, aging installations, insufficient use of flue gas abatement technologies, lack of development and limited use of distance heating systems etc. Industry is another major contributor to the overall quantity of pollutants in the air, due to the obsolete technologies and lack of energy efficiency, with state-owned enterprises such as RTB Bor, Azotara, Petrohemija and MSK being particularly problematic. A problem that is particularly prominent in the most densely populated urban areas, therefore endangering a large number of citizens, is air pollution from traffic. Due to excessive reliance on road traffic (both by citizens themselves and in public transportation) and a large number of inadequately maintained old vehicles, this sector is a major source of air pollution by nitrogen oxides, carbon monoxide and hydrocarbons. There is an indisputable need to limit and reduce the emission of pollutants into the air from other sectors as well, primarily from agriculture. However, implementation of adequate measures in the energy sector, in industry and traffic represents the key mechanism to improve the quality of air in Serbia and, consequently, mitigate the negative consequences of excessively polluted air on human health and the environment.

Improvement of air quality must become a priority also due to the strict requirements set by the European Union. European policy in the field of air pollution prevention is represented by two groups of directives: *The first,* defining maximum allowed levels of pollutants in the air (which are considered safe for health); and *the second,* which limits emissions of pollutants from individual installations and sets the standards of quality for oil derivatives. In the recent period, Serbia has achieved considerable success in the field of harmonizing domestic legislation with EU requirements. However, institutional, administrative and technical capacities, that are necessary for the implementation of the "good on paper" laws, have not yet been developed – therefore the results are lacking. We have already mentioned that the concentrations of pollutants in the air in many Serbian cities exceed the levels deemed safe for human health and preliminary analyses show that a very modest number of the existing installations in the energy sector and the industry are using the best available techniques in terms of air protection. As a good illustration, we could mention the thermal power production installations of EPS, which are currently taking up the first 5-6 places on the list of the largest sources of the majority of pollutants in Serbia and are breaching, without exception, both domestic and EU legislation. According to the last available data from 2016, measured concentrations of sulphur dioxide exceeded the prescribed limit values from 5 times (TENT) to as much as 20 times (TE Kostolac), while the levels of nitrogen oxides, on average, exceed the levels prescribed by the EU Directives two-fold. Bearing in mind that the period for harmonization of the thermal power plants with the European requirements has begun since 2018 (in line with a contract with the European Energy Community), EPS is looking at a very complex task of reducing the emissions of these pollutants in the upcoming years.

Reduction of air pollution from all sources requires enormous investments and the government is, at least indirectly, responsible for the investments of about 2.3 bn Euros. Air pollution prevention is a multidimensional challenge requiring investments into the reduction of pollution from the most diverse of sources, which is the obligation of privately owned and public enterprises, the government or individual households. However, by analysing the main causes of excessive air pollution in Serbia, we ascertained that the key to the resolution of this problem is in the role of the government - both through direct investments and through the reform of state-owned enterprises, in order to make them capable to invest - in a timely manner and to a sufficient extent - in air pollution prevention. *Firstly*, EPS will have to invest about 650 million Euros into flue gas desulfurization facilities and in the modernization of the facilities for the reduction of nitrogen oxides emissions and installation of filters (if needed), all by 2027. If it does not invest, there is a risk that the production capacities that fail to meet the required levels will be forcedly shut down,

which could cause a collapse of the power supply system in the country. *Secondly*, air pollution from city heating plants needs to be reduced (especially those using coal and mazut (fuel oil) as fuel), which will take investments of about 550 million Euros in the reconstruction of these plants (transition to natural gas, biomass or municipal waste) and extension of the heat network by 2030. *Thirdly*, the government and Srbijagas should invest about 1 bn Euros into the completion of the gasification process in Serbia, expanding the use of natural gas for heating in those parts of the country that are not yet covered by heat networks (also by 2030). *Fourthly*, reduction of air pollution by city transportation companies to an acceptable level requires investments into the substitution of environmentally obsolete buses of about 100 million Euros in the medium term, which mostly pertains to GSP Beograd. *Finally*, the Government could avoid the potentially high costs of achieving compliance with EU air pollution standards for enterprises undergoing privatization by finally resolving their status - privatizing them or allowing them to undergo bankruptcy.

Lack of investments is a chronic ailment in EPS's performance and the major question is whether this company is capable of a strong investment increase in air pollution prevention. EPS's operation is burdened with many issues and one of the most devastating effects of the company's poor performance in the last ten years, or so, is the lack of investments even for maintenance of the existing capacities. A lot has been said about the reform of EPS during the fiscal consolidation in the period 2015-2017 and it was meant to be an important part of the arrangement with the IMF at the time, but the general assessment is that we have not come far in overcoming essential barriers to the company's long-term success. Even though EPS has been achieving positive business results lately, the largest issues - excessive wage bill, low electricity tariff, poor collection of revenues, losses in the distribution network, organisational weaknesses, high level of debt - are still more or less present. Under such circumstances, it is no surprise that EPS's investments into environmental protection have remained relatively low on the list of priorities, so in the period 2003-2016, a mere 322 million Euros have been invested. Now EPS has an obligation to invest twice as much in air pollution prevention alone (about 650 million) by 2027, but the dynamic of the flue gas desulfurization project in TENT shows that these investments are implemented slowly even when the funding has been secured. Namely, the agreement with the Japanese Agency for International Cooperation on providing a loan for this project was signed back in 2011, while the contract on construction was only signed in the autumn of 2017. At that, investments into air pollution prevention are only a part of the investments that this company has to make in the upcoming 5 to 10 years. Enormous funds will be needed to replace the obsolete installations, planned to be put out of operation by 2024 and for the increase in share of renewable energy sources in the production of electricity - and these investments are measured in billions of Euros. In case the necessary reforms of EPS are further postponed, we believe there is a risk that this company will, once again, fail to invest sufficiently in the prescribed deadlines or that a part of the expenditures will have to fall to the budget, and both these outcomes are absolutely unacceptable.

To build a "cleaner" district heating system, local finances and local public enterprises in the heating sector need to be brought to order. Excessive reliance on coal and mazut in the production of heat energy (approximately 50%), obsolete infrastructure (on average 25 years old) and a relatively small number of households connected to the heating network are the main reasons for the excessive air pollution from the heating sector. To reduce the damages this sector causes to air quality in local communities, enormous investments are needed - about 330 million Euros to modernize production installations (transition to natural gas, renewable energy or municipal waste) and another 220 million Euros to revitalize and expand the district heating network by 2030.

Although these investments are mostly in the competence of local governments and city heating plants, bearing in mind the current state of their finances it is not very likely that the necessary investments will be made without involvement from the Government. As an example, investments in the entire heating sector at the moment amount to about 20 m Euros, while they should be 2-3 times higher in order to implement the mentioned projects within the prescribed deadline. Paradoxically, the fact that many city heating plants became "profitable" overnight after the sharp drop of fuel prices in 2014, did not spill over into increased investments. It seems that the main reason for this lies in the fact that local governments take over the largest share of this profit and use it for current expenditures, instead of investing in the heating system. We believe that, the key for achieving viable results in the improvement of air quality in the short term is for the installations that still rely predominantly on coal and mazut (such as those in Kragujevac, Bor, Leskovac or Kruševac) to transition to "cleaner" fuels. This represents a major challenge, as these local public enterprises are performing poorly, with the most extreme example being Energetika from Kragujevac - the problems of this company have escalated to such a degree that the company can no longer resolve them neither on its own nor even with the support of the City. Finally, improvements in the heating sector in Serbia depend greatly on the completion of the gasification at the national level and supply of the environmentally friendlier gas into the parts of the country that are still not covered by the heating distribution network. This will also take major investments (estimated at about 1 bn Euros), to be funded directly from the national budget and the PE "Srbijagas".

Improvement of air quality in large cities depends heavily on the reform of public transportation companies and investments into the modernisation of their vehicle fleet. Due to a low level of development of infrastructure for other types of transportation (railways or waterways), Serbia excessively relies on road traffic in the transport of both passengers and cargo; from the viewpoint of air quality, road traffic is the least acceptable option. As an example, the share of road traffic in passenger transport in Serbia is about 90%, which is significantly higher than in EU (a little over 50%) or Central and Eastern European countries (about 75%). Although the main reason of excessive air pollution from the traffic sector comes from a large number of privately owned vehicles that fail to comply with the standards, an important part of the problem in the largest cities is the aging vehicle fleet of public transportation companies - first of all, the Belgrade Public Transport Company (GSP Beograd). According to the available information, almost a half of the buses of this company (over 300) fail to meet the recent environmental standards and need to be replaced, while investments are also needed for the procurement of trams, as the average age of the existing vehicles is over 30 years. We estimate that the total investments into the GSP's vehicle fleet, aimed at reducing air pollution and improving the public transportation service for citizens, would amount to about 100 million Euros in the medium term. As it seems at the moment, modernization of the vehicle fleet of the city transportation company (GSP) will have to come out of Belgrade's budget, as GSP, even with annual subsidies of about 60 million Euros, is still accumulating losses. However, even though this investment of the City is justified from the position of air quality, we believe that the majority of the expenditures would have to be compensated by decreasing the subsidies awarded to GSP each year. In order for this to take place, the issues that have led this company to become one of the largest loss-makers in the country have to be resolved urgently - poor collection of fares, generous discount system, surplus staff and relatively high salaries.

To resolve the large industrial air pollution coming from state-owned enterprises, their status needs to be resolved - they should be either privatized or allowed to sink into bankruptcy. Serbian industry is a major air polluter and the key reasons are that the installations

are technologically obsolete, energetically inefficient, lack waste gas abatement units but also, that the legislative framework is incomplete and is not enforced consistently. The majority of expenditures for the harmonization of industrial installations with the very strict and complicated EU requirements should be borne by the private sector; however, one of Serbia's particularities is that state-owned enterprises are among the largest polluters. On the list of 20 biggest air polluters in 2016, state-owned enterprises from the energy sector, but also RTB Bor, Azotara, Petrohemija, MSK and others take dominant positions. At this moment, the Fiscal Council does not have the necessary data to assess the potential costs to bring the state-owned industrial installations into compliance with the applicable EU legislation. However, as majority of those have been performing poorly for years and have not been investing sufficiently, there is no doubt that at this point, they would need enormous investments to switch over to cleaner production technologies and install efficient flue gas abatement filters. Bearing in mind that the poor performance of state-owned enterprises is one of the major fiscal risks and that the payment of their enormous debts has already fallen to the national budget (e.g. the debt of Petrohemija to NIS of 105 million Euros), it is almost definite that these enterprises are incapable of undertaking the necessary measures of air quality protection and harmonization with EU legislation. We believe that the only justified solution that would allow the Government to avoid potentially huge costs for the necessary investments in the failing state-owned enterprises would be to finally resolve their status after almost twenty years - finding them a private partner or allowing them to go bankrupt. Further delay of their privatization is not only a fiscal risk, it is enormously detrimental to the environment as well.

The magnitude of the necessary investments and sources of funding

The problems and the necessary investments in environmental protection are so large that they have to become a public policy priority. For almost three decades, Serbia has been systematically lagging behind comparable European countries when it comes to environmental protection. In the last ten years, for which we have more accurate data, the public and private sector in Serbia have invested only a third of the funds invested by the CEE countries in environmental protection - 0.7% of GDP compared to 2% of GDP in CEE. Hence the municipal infrastructure in Serbia is in a significantly worse state than that in comparable countries, which reflects directly on the lower quality of life and health risks for the population (unsanitary city and municipal landfills, inadequate quality of drinking water, polluted air etc). A strong increase in public investments into environmental protection would have to become a priority for the government. First, this is the main prerequisite for overcoming the unacceptably poor living conditions and improving the health of the population. Secondly, greater investments would, at the same time, improve the structure of the Serbian budget (with inadequate investments for capital expenditures) and would have a positive effect on economic growth. Thirdly, Serbia could easily face penalties in the future, amounting to several tens of millions of Euros per year, if it fails to meet the prescribed environmental protection standards in the process of EU accession. The necessary investments into environmental protection should be sustainable within the budget, especially bearing in mind the large amount of funds that need to be allocated in the national and local government budgets for these purposes in the upcoming years. This is only possible if the reforms accelerate, primarily the reforms in national and local public enterprises and if, in parallel to this, the budget funds are not used for populist and unsustainable growth of current expenditures - primarily on excessive increase in pensions and salaries in the public sector.

Annual budget expenditures for environmental protection in the upcoming long-term period would have to increase by about 500 million Euros (by about 1.3% of GDP). The current level of public investments in environment (up to 100 million Euros per year) fails to meet even the minimum environmental protection standards. The Fiscal Council's analysis shows that, to reach the satisfactory environmental protection standards and harmonize with the European Directives, the government would have to allocate at least 8-9 bn Euros in the upcoming 10 to 15 years. The majority of these funds need to be invested in the water sector - about 6 bn Euros (wastewater treatment plants, development of the sewers etc.); an additional 1.5 bn need to be invested into waste (development of regional landfills with all the accompanying installations etc) and about 1 bn in air protection and quality. Public investments in environmental protection are funded from the national budget, but also from the local budgets (towns and municipalities, together with local public enterprises). In order to meet the necessary investments, the government would have to invest, on average, about 600 m Euros per year in environmental protection. The fact that this would increase environmental investments by about 1.3% of GDP (500 m Euros) compared to the current level of about 0.2% of GDP (80-100 m Euros) shows that this is an ambitious plan. Reaching the level of public investments into environment of 1.5% of GDP would be adequate for Serbia's needs and for the experience of other countries, which have come far in this field, showing that this is an adequate investment level. In addition, environmental investments would increase the overall government investments from the current 3% to over 4.5% of GDP which would, for the most part, resolve one of the greatest structural imbalances of public finance (insufficient public investments). We also note that the aforementioned sums do not represent total environmental investments, as state-owned and private companies would also have to invest more - we estimate this to be up to 200 m Euros per year, for several years. Even though the budget would not appear as the direct source of funds in this case, the government would still play a pivotal role - its control mechanism would have to ensure that the companies actually make the necessary investments.

Increase in public expenditures for environmental protection should be implemented in three stages. In the first stage (in the upcoming two to three years), investments would be significantly enlarged due to priority projects and those that have already started; in the second stage (for about ten years following the first stage), they would be maintained at this (high) level due to huge needs across the board, while in the third stage, the achieved infrastructure level would require a somewhat lower amount of funds (although still high compared to current investments). The first stage pertains to the short-term period of 2019-2021, in which the government would have to increase its environmental investments to the target value of 1.5% of GDP. By looking into the planned projects and those that have started, we believe that this plan is achievable. A quicker and more efficient implementation of the projects that have already started is necessary (e.g. regional landfill in Inđija, Subotica and Nova Varoš), as well as those projects for which the development of the project documentation is nearing completion. Here, we also include the investments that don’t require complex documentation, such as procurement of waste removal trucks, recycling containers, construction of recycling yards, procurement of monitoring equipment etc. In addition, in this period, the development of the entire project documentation for the more complex projects should be financed, which is one of the key prerequisites to have an accelerated construction of the missing infrastructure (around 350 wastewater treatment plants, over 10,000 km of additional sewers, landfills and the accompanying treatment installations etc.) in the medium-term (from 2021 onwards). In the second, longest period, which should last for about ten years, public investments into the environmental protection should be kept at the level of 1.5% of GDP on average per year, which would allow Serbia to temporarily overtake the CEE countries in these investments, as the CEE countries - for the most part - already have the basic public municipal infrastructure in place.

Finally, in the third stage, when large infrastructural works are brought to an end, it is natural and expected that the expenditures for environmental protection should somewhat decrease, down to the level that will allow for regular functioning of the newly built systems (repairs, regular investments, operational costs, salaries for staff). This means that in this period, we expect public expenditures for environmental protection to approach the current CEE average of 1% of GDP.

Serbia needs to have major investments in near future in extremely expensive projects and they can be an important flywheel for the domestic economy. The necessary environmental investments in Serbia in the upcoming decades are quite large and will burden the national budget and the budgets of local communities. However, implementation of these projects will provide jobs for a large number of companies working in construction, industry and other activities. A major part of the investments pertain to construction works, water supply pipelines and other works that could be performed by domestic companies, which would generate a multiplicative effect on the entire economy. Hence, environmental investments present an opportunity for the economic development in Serbia. In order for the domestic companies to be as involved as possible in the implementation of environmental projects, the Government should acquaint the private companies with the projects it intends to implement as soon as possible, as well as with the dynamics of implementation and other elements of the new long-term investment framework. Although the most important long-term effects of environmental investments include better quality of life, healthier population and longer life expectancy, there are also considerable economic effects in the long-term (lower costs of health care, better investment climate etc.).

The funding of environmental investments is necessary and can be achieved without endangering the budget stability. Preliminary fiscal forecasts of revenues and expenditures for 2018 and the upcoming years show that the proposed increase in public investments for these purposes can be achieved without disrupting the established macro-fiscal balance. It is important, therefore, to plan the increase in public expenditures for environmental investments of 1.3% of GDP as a part of a sustainable fiscal plan (structural deficit of 0.5% of GDP). We estimate that public investment expenditures can be increased by about 1% of GDP from the fiscal space procured by the decrease in public expenditures for interests (due to a decreasing public debt) and completion of the payments of guaranteed debt of public enterprises from the budget; in addition, the planned Tax Administration reform should lead to an increase in public revenues. The additional 0.3-0.4% of GDP can be procured through the consolidation of the budgets of towns and municipalities (decrease in subsidies) and restructuring of the public utility companies (which the Fiscal Council has demonstrated in a separate report: "Local Public Finance: Issues, Risks and Recommendations", June 2017). The aforementioned sources provide the necessary budget funds for environmental investments.

Local governments should participate, on equal terms, in the funding of environmental projects, but at the moment they are unable to do so. Local governments are one of the levels of government that should participate in the construction of infrastructure needed to improve environmental protection. In fact, the areas that determine the status of environmental protection that can be affected by investments (waste, drinking water, wastewater etc.) belong to the competence and responsibility of the local government, rather than to the central government. Considering the extremely high sums that need to be invested, in international practice funding for environmental projects is usually split between the central and the local budget. This should be the arrangement that Serbia should aim for, and the reform of local public finance (including local public enterprises) should stop the irrational drain of funds for non-productive subsidies and preserve the space for the necessary investments. However, at this moment, local governments do not have sufficient funds, resources or capacities (expert staff, contemporary know-how,

knowledge of EU legislation) for planning, implementation and realisation of the demanding environmental projects. We thus estimate that it is necessary to centralize, to a large extent, the environmental policy in parallel with the resolution of the structural shortcomings at the local government level. If this is not done, there is a pronounced risk that the urgent construction of infrastructure (upon which the health, quality of life and the business climate are contingent) could be postponed for several years. In a financial sense, this would mean that the central government would have to cover the gap in the local funds, at least in the first stage (in the next two to three years). Specifically, the national budget should bridge the gap and provide the funds that the local governments cannot afford to invest. Out of the estimated total sum of funds that would be received through a reform of local governments (up to 0.4% of GDP), at least a half will have to come from the central level of government, since some of the better developed cities (Belgrade, Novi Sad) can already participate, to a large extent, in co-funding these projects with their own funds. Participation of the central budget in environmental projects is also justified because of the negative external effects. Namely, pollution arising in one local community spills over into other local communities or regions and the expenditures (for instance, for treatment of diseases that arise from pollution) are financed from the contributions paid by all citizens of Serbia.

Co-funding should remain the principle upon which the relationship between the central and local governments shall rest. The fact that the central government has to intervene doesn't mean that the local governments would be completely freed from their obligations to fund these projects. Complete reliance on the central budget would lead to a large and probably irrational demand of local governments for funds from the central budget. The transfers would have to be defined in such a way that would see the national budget allowing for a specific transfer for each dinar of investments made by local communities or regions (group of local communities). Formally, it would be defined that, depending on the type of project in question, for each dinar invested by the local communities, the central government would approve, for example, half a dinar, dinar, two or three dinars of additional funds. The amount of transfered funds would be different for different types of projects, with central government participating to a greater extent in the more expensive projects or projects of a wider interest (e.g. regional landfills). When determining the amount of transfers, the level of development of the local communities would also have to be considered, so the less developed communities would receive greater transfers.

Transfers to local governments already exist, it is just important to improve their quality, i.e. the conditions for their approval. It is important to point out that the transfers from the central to local budgets would not have the properties of subsidies to cover losses, but would, in essence, be investment funds. Formally, one of the possible solutions would be to introduce earmarked co-financing transfers (in some countries, these are referred to as environmental fiscal transfers) that would be approved from the national budget to the local communities or groups of local communities for the implementation of environmental projects. The central government is already participating, in different ways, in the financing of such projects, but this participation is implemented through *ad hoc* agreements between the central government on one hand and the local communities and regions, on the other. This practice should be improved so that the transfers are contingent on the degree of effort and progress made by the local community in planning and implementing environmental projects.

Increased investments into environmental protection will also partly be funded from the EU funds. Environmental investment projects are high on the list of priorities for EU countries and Serbia has the option to use EU funds for many such projects. This primarily refers to grants from the IPA funds that can be used for co-funding a significant number of environmental investments. In addition, Serbia at disposal also has loans from international financial institutions

that are approved under far more favourable conditions than market conditions (lower interest rates, longer payment periods). To use these funds, the key thing is to increase Serbia's absorption capacities, which would mean the resolution of numerous systemic issues in environmental investment management - which is needed to coordinate the different competent bodies and levels of government, prepare high quality project documentation needed for access to these funds etc. In general, one of the prerequisites for an environmental investment increase is the improvement in the systemic framework in which these investments are implemented and this will be described in more detail below.

The main prerequisite for greater investments in municipal infrastructure is the establishment of a system that will support this growth of investments. In order to make the environmental protection plans operational as soon as possible and reach and maintain the annual level of investments of 1.5% of GDP, in the next three years it is necessary to establish a public policy management system in the field of environmental protection. This means the following activities:

1) Strategic decisions made by central government that would steer environmental policy and represent the foundation for investments into public utility infrastructure in the next ten years. On one hand, this means the adoption of new (still lacking) strategic documents at the national level, in the field of air quality and climate change - without which it would be impossible to comprehend the current situation and determine the necessary investments. On the other hand, the existing obsolete strategies need to be revised - umbrella national strategy and the waste management strategy. In addition, the water management strategy should also be revised since in the meantime new (lower) investment assessments have been made, while all sectoral plans of the central government should be harmonized with the potentially shorter deadlines for meeting the EU standards. Finally, new action plans need to be adopted for the implementation of these strategies, as well as specific plans for the implementation of EU environmental directives.

2) Expansion of the competencies of the Ministry of Environmental Protection. At the moment, the Ministry of Environmental Protection (MoEP) has insufficient environmental competencies - almost the entire water management sector has been left outside of its competencies, while the competencies over the operational parts of the system (local, public and state-owned enterprises) are almost inexistent. This Ministry should become the main pillar for all activities in the environment sector, which can be done by integrating the water management and environmental protection sectors and giving partial control and monitoring over local and public utility companies to the MoEP (especially over their plans for the development of communal infrastructure).

3) Operationalisation of the Green Fund. The more extensive competencies of the MoEP must be accompanied by a larger budget of the MoEP. This can be achieved through the operationalization of the Green Fund, which means that this fund should collect the earmarked revenue from environmental taxes and fees - 90 to 110 million Euros at the annual level. This would represent a significant source of funding for environmental protection and the funds could be used to finance preparatory works (e.g. development of the project documentation) and co-fund projects at the local level. In this way, there will exist a minimal guaranteed amount of funds for environmental protection, which could not be decreased by *ad hoc* decisions.

4) Consolidation of the budgets of cities and municipalities and the reform of public utility companies. Establishment of a just financing system, which would allow for the investment

expenditures to be equally distributed between the central and local governments, depends on this step. To avoid the situation in which the national budget would bear the entire cost of construction of municipal infrastructure, local governments and public utility companies should be brought into a situation in which they are able to invest. For this, it will be necessary to consolidate the budgets of municipalities and cities (control of current expenditures, decrease of subsidies, better revenue collection) together with a restructuring of the public utility companies (downsizing, increased collection of revenues, increase in tariffs). Approving environmental transfers to local governments will probably not suffice in encouraging them to implement environmental projects. Hence it is necessary to consider introducing certain penal measures for those local communities that fail to contribute, to a sufficient extent, to the implementation of environmental projects. Justification for the implementation of penal measures would be that the local communities increase expenditures for healthcare, funded from the contributions paid by all citizens of Serbia, but also the fact that pollution spills over from one local community to other local communities.

5) Establishment of a clear and functional coordination mechanism. The existing environmental management system is quite decentralized and the largest (operational) responsibility lies with the local governments and public utility companies that, at the same time, have the least capacity to handle the entrusted competencies in an appropriate manner. To allow for efficient project implementation, it is of utmost importance to establish a clear and functional coordination mechanism between the different ministries, public and state-owned enterprises and local governments - which does not exist in Serbia at the moment (as indicated by the latest European Commission Progress Report on accession negotiations).

6) Hiring the necessary staff as soon as possible. Throughout the system there is a shortage of qualified staff for administrative and inspection tasks in the environmental sector; especially lacking are project development experts and engineers. As an illustration, in the water management sector alone, there is a shortage of 1,500 engineers and about 1,700 project development experts. The number of environmental inspectors in Serbia is 2-3 times smaller than the number that would be needed for efficient monitoring and supervision; the administrative capacities for transposition and implementation of EU Directives should also be similarly increased. Therefore, a thorough analysis of the missing staff in the environmental sector should be performed as soon as possible, including a review of the situation across different levels of government (including public utility companies) and per type of work (administration, inspection, engineers etc). In addition, the staff that would be hired would be the missing staff without which an efficient implementation of infrastructural investments and harmonisation with European legislation would be impossible.

7) Improve environmental monitoring. The existing monitoring system is underdeveloped. On one hand, it is not comprehensive; for instance, only 20% of surface and ground waters are monitored, while landfill monitoring is practically non-existent. On the other hand, even in places where there is some form of quality assessment of environmental indicators, it is mostly reduced to a few key indicators; for an adequate environmental management and public policy steering, a wider set of data and indicators are needed. A monitoring system needs to be established and empowered on a local level, so that the network of these monitoring systems would complement the centralized monitoring system.

The government should take a responsible approach to the resolution of the environmental problems, in order to harmonize with EU directives in a timely manner and avoid paying penalties. The aforementioned measures show, without a doubt, that the needed

reforms are thorough and demanding and involve the entire public sector - and they need to be implemented in a relatively short time (in the next two to three years). Stalling these reforms, or avoiding them altogether, would mean a slow and inefficient implementation of infrastructural projects. This can lead Serbia to an unfavourable position with regards to EU. Namely, the European Commission controls the implementation of legislation in the environmental field in member states and candidate countries; in case of a breach of deadlines for the harmonisation with the European directives, Serbia will almost definitely have to pay the penalties to the EU, which can amount to as much as 20-40 million Euros per year. Such an expenditure should be avoided at all costs. By ranking the environmental protection high on the list of priorities of the economic policy, the Government would allow for a timely implementation of the necessary measures, improvement in communal infrastructure and achievement of environmental protection standards of the developed European countries.