

TIME TO PHASE OUT DIRTY COAL IN SOUTH EASTERN EUROPE

THE HIDDEN COST WE CAN AVOID

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CONTENTS

1. EXECUTIVE SUMMARY	5
2. INTRODUCTION/CONTEXT	11
2.1 Purpose of the Report.	11
2.2 Issues at stake.	13
2.3 The Energy Community Process	17
2.4 Relevant EU Directives	19
3. COUNTRY CASE STUDIES	31
3.1 Bosnia and Herzegovina	31
3.2 Serbia.	35
3.3 Montenegro	39
4. DISCUSSION	42
Case of Šoštanj TPP – Unit 6	47
5. CONCLUSIONS AND RECOMMENDATIONS	48

1. EXECUTIVE SUMMARY

SEE Change Net, in cooperation with partners: CPI from Bosnia and Herzegovina, MANS from Montenegro and NGO Fractal and CEKOR from Serbia, has prepared this report to inform decision makers and the public about the implications of the decisions regarding the future of the Large Combustion Plants in South East Europe taking place under the Energy Community.

All SEE countries will in the coming years need to implement the EU environmental *Acquis Communautaire* and adopt targets to reduce greenhouse gas emissions. They have already adopted targets for renewable energy for 2020. But in the Energy Strategy of the Energy Community¹ adopted in 2012, Bosnia and Herzegovina, Kosovo, Montenegro and Serbia indicate plans to increase the production of electricity from coal in Large Combustion Plants by between 15 and almost 400 per cent in 2020 compared to 2009, and to triple the exports of electricity.

If we compare the investment options of building new coal fired power plants or installing pollution control in the existing ones with the current annual costs of burning coal to the economy (health costs and subsidies) it becomes obvious that coal should be phased out as soon as possible.

1 See www.energy-community.org for details

Table 1: Comparison of annual costs of coal to economy with the investment options

Country	Annual health costs EUR	Annual level of subsidies for fossil fuels in 2009 EUR	Investment in pollution control in existing TPPs EUR	New investments planned EUR
Bosnia and Herzegovina	0.5 – 1.3 bn	1.1 – 1.2 bn	270 m	1.75 bn
Montenegro	50 – 140 m	290 – 320 m	127 m	175–267 m
Serbia	1.8 – 5 bn	2 – 2.5 bn	634 m	7.89 bn

Sources: The Unpaid Health Bill: How Coal Power Plants Make Us Sick HEAL, Energy Strategy of the Energy Community, Ref: 10thMC/18/10/2012 – Annex 19/27.07.2012; Fossil fuel subsidies in the Western Balkans, UNDP RBEC Bratislava 2011, National strategic documents. No separate figures for coal are available but they are thought to make up the majority of fossil fuel subsidies in the countries concerned. The health cost estimates for BH and Montenegro are extrapolated from the Serbian estimate in linear relation to coal based electricity production per capita.

6

The planned increase in generating capacity by building new power plants would lead to continued subsidies and emissions for at least 40 years. Even if the pollution is reduced by 90 % compared to the present levels, the annual health costs would remain at a level between 250 and 650 million annually, meaning that total negative effects (external costs) of coal would remain at between 3.6 and 4.7 billion Euro in the three countries. Basically, the three countries would pay 10 billion Euro in order to loose another 160 billion in the lifetime of the powerplants.

Investing in pollution control and then closing the existing powerplants in the next 10 years would cost 1 billion in investment and would cause "only" some 40 billion external costs until their closure, but reducing the negative health effects much sooner than waiting for new plants to be built.

New coal technologies might be an improvement in security, efficiency and environmental impact compared to the existing situation, but building new thermal power plants locks in the capital, emissions, external costs and the structure of the energy sector for four or five decades, well beyond the expected date of EU accession of the SEE countries and beyond the EU target of decarbonising the power sector by 2050.

The study Estimating Health Risks caused by Emissions of Air Pollutants from Coal Fired Power Plants in Europe – Documentation of Methods and Results conducted by the

University of Stuttgart in 2013 also includes the two new proposed units Pljevlja II and Maoče in Montenegro. The estimated health impact of Pljevlja II is 16 years of life lost annually and of Maoče 348 years of life lost. Together with the workdays lost, the health cost of these two units would be some 20 million Euro per year even though they are supposed to comply with the EU directives.

With present low prices of electricity, the countries of SEE are not able to secure the funding for these plans on their own. They are looking to donors, international financial institutions (IFIs) and international energy companies to come up with the investment capital. EU, IFIs and bilateral donors are already involved in various investment projects and studies related to thermal power plants (TPPs) in the region. Even if the investment capital is raised internationally, the costs of large scale infrastructure are eventually transferred to the domestic population either through the price of electricity or through various types of subsidies for the investment, operation and decommissioning. If EU environmental standards are not enforced vigorously, we might be witnessing a case of export of pollution and carbon leakage from the more developed EU member states, taking advantage of the economic situation and transition arrangements in the SEE.

A key instrument and driver of energy and related environmental policy in the region is the Energy Community (EnCom) of the European Union and nine contracting parties from the South East Europe and Black Sea regions, established in 2005. Article 3 of the EnCom Treaty requires the contracting parties to implement the *Acquis Communautaire* on energy, environment, competition and renewables. More specifically, it sets out a timetable for the implementation of priority Directives. The EIA Directive and Article 4(2) of the Birds Directive were to be implemented by the entry into force of the Treaty; The Directive relating to a reduction in the sulphur content of certain liquid fuels by 31 December 2011; and the Large Combustion Plants (LCP) Directive is to be implemented by 31 December 2017.

The outstanding implementation of the LCP Directive faces two legal problems:

- Within the EU the directive is being repealed with effect from 1 January 2016 by the Industrial Emissions Directive (IED), which means it expires before the EnCom contracting Parties are to implement it;
- The LCP Directive itself sets several intermediate deadlines for implementation by EU member states, which were not taken into account and set for the Contracting Parties at the time of signature of the Treaty.

These two problems are creating uncertainty and confusion regarding the scope and timing of necessary investments and regarding the timetable for reduction of air pollution harmful to the population of the SEE countries. To address the two problems, the European Commission has prepared a proposal for the Ministerial Council of the EnCom to set up a time schedule concerning the implementation of the Large Combustion Plant Directive (LCPD) and the transition to the Industrial Emissions Directive (IED). Instead of proposing a simple and straightforward implementation approach which would phase in directly the relevant Emission Limit Values set out according to the IED framework, the proposals propose a mix of LCPD specific measures and the IED.

8

The original treaty setting the 2017 deadline for the implementation of the LCPD had the advantage of being simple. The present proposal proposes that by 2018, all operating licenses for existing plants contain conditions relating to emission limit values for new plants or existing plants are subject to national emission reduction plans according to LCPD. The national emission reduction plans should be prepared and submitted to the Energy Community Secretariat by the end of 2015. At the same time, the contracting parties would agree to implement the IED, which sets stricter standards than LCPD for SO₂ and dust, and updates the ELVs for the smaller plant category range. There is an apparent conflict with the proposed derogation mechanism, since the NERP system will be no longer existent as from 1 January 2016 and uses different calculation methods compared to the Transitional National Plan (TNP) set within Article 32 of the IED, which may be used by certain plants from 1st January 2016 until 30 June 2020. This situation will not guarantee legal stability, investment confidence and a level playing field for the Single Energy Market.

The details of this initiative are currently discussed in the context of the Permanent High Level Group of the EnCom, and will have a major impact on the future of thermal power plants, air pollution and carbon emissions in the SEE region. A study on the need for modernization of LCPs in the Energy Community has been produced for the Energy Community by consultants S.E.E.C. Ltd. from Belgrade. This study must be published in order to allow informed public debate on this issue.

We believe that significant investment in new and additional coal fired power plant is not warranted. It would lock the polluting coal technologies in for decades, making it harder to secure clean air and a good ecological and chemical status of surface waters in the region and impossible to decarbonise the electricity production by 2050.

The economically and environmentally sound policy would be to reduce air pollution from the TPPs as soon as possible, while not incurring excessive costs. This may mean installing pollution abatement technology on existing units and phasing them out in a decade or two. This phaseout should be the main objective of any emission reduction plan, that the countries are asked to prepare for the existing power plants by end of 2015. Another general consideration relates to the locking-in of carbon. Some countries appear to expect Carbon Capture and Storage (CCS) to enable them to continue with burning coal, however so far it is far from being viable on a commercial scale.

The Energy Community Treaty sets the deadline for the full implementation of the LCPD for 31 December 2017 with no time extension for preparing national emission reduction plans. That means that from 1 January 2018 the contracting parties are obliged to ensure that all licenses for the operation of existing plants contain conditions relating to compliance with the emission limit values established for new plants. It is already becoming clear that the contracting parties are not likely to comply with the LCPD by this date and thus will breach the provisions of the ECT. The Commission's proposal intends to give the contracting parties additional transitional time and the possibility of introducing NERPs and to oblige them to implement the IED in 2018 with regard to new power plants and in 2022 with regard to existing power plants.

Having in mind that the additional time is given for compliance with emission limit values and in order to provide for legal guarantee and to support a coherent approach for the implementation of the EU environment acquis, the Energy Treaty should no longer refer to mechanisms and approaches of the LCPD that will be repealed as from 1st January 2016. Instead certain derogation mechanisms offered by the IED could be used instead. In this respect, the key role will be played by time limited National Emission Reduction Plans, the "Transitional National Plans" (TNP, IED Directive), that the countries may use for certain LCPs from the period of 1st January 2016 – 30 June 2020. The assessment of those submissions is currently under way and a final decision is expected by the beginning of 2014.

It could be therefore envisaged that the TNP may be used under the same conditions as for the other Member States that use this system. The end date for submission could be brought to 31 December 2015 (as proposed for the NERP), but the ceiling calculations would have to be set on the basis of the IED mechanism, with a proposed start date of the full LCPD implementation of 31 December 2017. It is crucial that any strengthening

of the Energy Community Parties' obligations regarding the LCPD and the IED are binding, not 'recommendations' or 'guidelines'.

In order to make sure that negative impacts on human health are reduced as a matter of priority, the Air Quality Directive 2008/50/EC and the Environmental Quality Standards Directive 2008/105/EC should be included in the Article 3 of the Energy Community Treaty "The Extension of the *Acquis communautaire*", by means of an amendment of the treaty along with the Industrial Emissions Directive 2010/75/EU.

Governments, EU, bilateral donors, and IFIs should continue and scale up the already successful energy efficiency and renewables promotion programmes in the countries. Achieved and expected results of these programmes should be taken into account in the preparation of the TNPs.

2. INTRODUCTION/CONTEXT

2.1 Purpose of the Report

South East Europe (SEE) is a region in triple transition from conflict to peace, central planning to free-market economies, and State Socialism to fledgling democracies. This transition is mainly driven by the perspective of accession to the European Union. Croatia is already an EU member, which means it has to contribute its share to reaching the EU targets of reaching 20% greenhouse gas emission reduction, 20% increase in energy efficiency and 20% share of renewables, as well as to the proposed full decarbonisation of electricity generation by 2050. The remaining SEE countries are at different stages of the accession process and environmental and energy policy reform represent an important aspect of the requirements they need to meet for membership.

The SEE region has some of the best environmental qualities in Europe, such as high biodiversity and important water resources. But at the same time, people in the region suffer from pollution above the acceptable EU standards. Unfortunately, even with the long term strategic interest of SEE countries in EU approximation, the performance in improvement of environmental standards for their citizens is slow.

A key instrument and driver of energy and related environmental policy in the region is the Energy Community (EnCom) of the European Union and nine contracting parties from the South East Europe and Black Sea regions, established in 2005. Article 3 of the EnCom Treaty requires the contracting parties to implement the *Acquis Communautaire* on energy, environment, competition and renewables. More specifically, it sets out a timetable for the implementation of priority Directives. The EIA Directive and Article

4(2) of the Birds Directive were to be implemented by the entry into force of the Treaty; The Directive relating to a reduction in the sulphur content of certain liquid fuels by 31 December 2011; and the Large Combustion Plants (LCP) Directive is to be implemented by 31 December 2017.

The outstanding implementation of the LCP Directive faces two legal problems:

- The directive is repealed with effect from 1 January 2016 by the Industrial Emissions Directive (IED), which means it expires before the EnCom Contracting Parties are to implement it;
- The LCP Directive itself sets several intermediate deadlines for implementation by EU member states, which were not taken into account and set for the Contracting Parties at the time of signature of the Treaty.

12

These two problems are creating uncertainty and confusion regarding the scope and timing of necessary investments and regarding the timetable for reduction of air pollution harmful to the population of the SEE countries. To address the two problems, the European Commission has prepared a proposal for the Ministerial Council of the EnCom to set up a time schedule concerning the implementation of the Large Combustion Plant Directive (LCPD) and the transition to the Industrial Emissions Directive (IED). The details of this initiative are currently discussed in the context of the Permanent High Level Group of the EnCom, and will have a major impact on the future of thermal power plants, air pollution and carbon emissions in the SEE region.

This short report is being prepared on behalf of SEE Change Net, in cooperation with partners: CPI from Bosnia and Herzegovina, MANS from Montenegro and NGO Fractal and CEKOR from Serbia. The purpose of the report is to inform decision makers and the public about the implications of the decisions regarding the future of the Large Combustion Plants in South East Europe under the Energy Community.

2.2 Issues at stake

The SEE countries rely heavily on electricity from coal fired thermal power plants. All these plants (except Plomin 2 in Croatia which was built in 2000) were built before 1990 and most of them burn brown coal or lignite from local mines. Combined coal mines and thermal power plants represent some of the largest social and economic conglomerates and shape the social and economic structure of entire regions.

Table 2: Share of electricity from coal (lignite) in SEE countries in 2009

Country	Total electricity supply GWh	Electricity production in coal fired PP GWh	Share of electricity from coal %	Fossil fuel related subsidies as % of GDP
Albania	6630	0	0	7–8
Bosnia and Herzegovina	11,696	6578	56	9–10
Croatia	26,623	4375	16	5–6
Macedonia	8266	5379	65	8–9
Montenegro	3748	689	18	10–11
Kosovo	5469	4855	89	35–36
Serbia	36,897	26,833	73	7–9

Source: Energy Strategy of the Energy Community, Ref: 10thMC/18/10/2012 – Annex 19/27.07.2012; Fossil fuel subsidies in the Western Balkans, UNDP RBEC Bratislava 2011

According to the national strategic documents only a few thermal power plants in SEE were modernised in the last decade and most are already obsolete or at least at the end of their life time, which raises the issue of their future. They should be either upgraded in order to comply with the EU environmental standards, replaced with new units, their production should be limited or they should be phased out. In any of these cases, major investments are required in the next decade either related to TPPs themselves or to their closure and replacement with other sources. The question is which option or combination of options should the countries invest in. This is a key question for the development of the energy sector, for environment and for the wider aspects of economic development such as industrial policy and socio – economic development of the regions.

At the same time, the countries are providing significant explicit and implicit subsidies to the coal industry as part of the subsidies provided to fossil fuels. The SEE countries

are estimated to subsidize fossil fuels with between 5 to 11% of their GDP (the numbers for Kosovo are not representative because of the large size of informal economy outside the official GDP).

In addition to the subsidies, the limited data on health effects of air pollution (in Serbia alone the annual cost associated with negative effects of burning coal on human health is estimated at 1.8 – 5 billion Euro) indicate that the health costs related to coal may actually be higher than the revenues from the electricity produced. This suggests that the priority for the available funds should be to invest in the fastest possible reduction of air pollution by SO_x, NO_x and particulate matter.

But in the Energy Strategy of the Energy Community adopted in 2012, the Contracting Parties indicated plans for very ambitious investments in new power generation by 2030. Their strategies and investment plans aim at covering the forecasted demand growth, and also at exporting electricity outside the region. The Strategy says that Montenegro and Kosovo are to join Bosnia and Herzegovina as exporters of electricity by 2020, while the exports from the region will triple.

Table 3: Planned increases in the production of coal fired thermal power

Country	Electricity production in coal fired Power plants GWh			Increase 2009–2020 in %
	2009	2020	2030	
Albania	0	0	0	0
Bosnia and Herzegovina	6578	9536	-	45
Croatia	4375	11,010	9500	152
Kosovo	4855	8188	8188	69
Macedonia	5379	4202	7657	-22
Montenegro	689	3389	4749	392
Serbia	25,004 (2010)	28,830	28,528	15

Sources: Energy Strategy of the Energy Community, Ref: 10thMC/18/10/2012 – Annex 19/27.07.2012, For Serbia: Draft Strategy for development of the energy sector of Republic of Serbia in the period till 2025 with projections till 2030 – reference scenario

The total added generating capacity in the Western Balkans and Moldova is forecasted to grow by 13.23 GW between 2012 and 2020, which represents an increase of approx

64 % from 2009 capacity. 45% of this added capacity is to be based on lignite. The total investment for these new capacities is estimated at a daunting 28.8 billion Euro and could be even higher.

All SEE countries will in the coming years need to implement the EU environmental *Acquis Communautaire* and adopt targets to reduce greenhouse gas emissions. They have already adopted targets for renewable energy for 2020. But it is not obvious how all these can be achieved with the major planned increases in new coal based thermal power and by letting non-compliant TPPs operate at lower costs compared to other suppliers in the EU energy market beyond 2020. And looking at the existing burden of subsidies and health cost, these investments make no sense also from the domestic point of view.

Obviously, the countries of the SEE with present low prices of electricity are not able to secure the funding for these plans on their own. They are looking to donors, international financial institutions and international energy companies to come up with the investment capital. EU, IFIs and bilateral donors are already involved in various investment projects and studies related to TPPs in the region.

We hereby stress that the EU should not provide any financial support for fossil fuels.

Even if the investment capital is raised internationally, experience shows that the costs of large scale infrastructure are eventually transferred to the domestic population either through the price of electricity or through various types of subsidies for the investment, operation and decommissioning. One example is that the IFIs require state guarantees for their loans, often leading either to increases in electricity prices to repay the loans or to government taking over the payment if the electricity generating company is not able to pay. In case of public private partnerships, governments need to provide favourable conditions as well as price guarantees to the investors, again transferring the cost to the consumers or the public.

In making such heavy decisions, the following aspects of different policies and policy objectives need to be taken into account:

- reducing impacts on human health by compliance with the Air Quality Directive and the Large Combustion Plants/Industrial Emissions Directive, aiming at reducing the effects of air pollution (SO₂, NO_x, particles) on human health,

- achieving the objectives of EU water quality policy, i.e. to achieve by 2015 (Water Framework Directive) or 2020 (OSPAR Convention) good ecological and chemical status of surface waters
- achieving the objectives of EU climate policy that aims at carbon free electricity production by 2050.
- security of supply and price competitiveness of different energy sources (taking into account the explicit and implicit subsidies) in the context of the common European energy markets, rapidly changing technologies and falling prices of renewable energy sources.

With the expectation that most investment capital should be raised internationally, another question is raised: whether the future thermal power units will serve the projected increase in domestic demand for electricity, or whether a significant proportion of the electricity will be exported to EU countries.. If the latter is the case and the EU standards are not enforced vigorously, we might be witnessing a case of export of pollution and carbon leakage from the more developed EU member states, taking advantage of the economic situation and transition arrangements in SEE.

All these questions should be clarified and answered before financially very demanding decisions on future investment in electricity generation are made. Both internal and external costs and benefits should be weighed in this process, as well as the various alternative scenarios of achieving the policy objectives set by the EU and demanded by the populations of the SEE countries.

The recently published Serbian draft energy strategy as well as lack of progress in actually attracting international investment in new TPPs in other SEE countries indicates that the plans for large increase in coal fired power generation are already being reconsidered within each country. This means that it is increasingly clear to all stakeholders that investment in coal is not necessarily the obvious choice and needs to be well founded in order to avoid stranded investments causing negative effects on environment and economy. The funds may be much better spent on future oriented investments in energy efficiency and renewable energy sources.

The Energy Community process and the implementation of EU directives provide the framework and an opportunity for such a decision making process.

2.3 The Energy Community Process

The Treaty establishing Energy Community paves the way to a set of common institutions and a legal framework within which these institutions operate. It also defines the rights and obligations of the Parties to the Treaty. The principles of the Treaty establishing the Energy Community coincide with that of the European Steel and Coal Community, the genesis of the European Union. The Treaty subsequently strives to balance the commercial, political and social interests of all Parties. In guaranteeing stable and continuous energy supply, the process of Energy Community will ultimately result in enhanced economic development and social stability.

According to Article 2, the task of the Energy Community is to organise the relations between the Parties and create a legal and economic framework in relation to Network Energy in order to:

- (a) create a stable regulatory and market framework capable of attracting investment in gas networks, power generation, and transmission and distribution networks.
- (b) create a single regulatory space for trade in Network Energy that is necessary to match the geographic extent of the concerned product markets,
- (c) enhance the security of supply of the single regulatory space
- (d) improve the environmental situation in relation to Network Energy and related energy efficiency, foster the use of renewable energy, and set out the conditions for energy trade in the single regulatory space,**
- (e) develop Network Energy market competition on a broader geographic scale and exploit economies of scale.

In order to facilitate the process, the Treaty establishing the Energy Community defines the institutional setting and equips its stakeholders with distinct rights and duties. As regards the commitments undertaken by the Parties to the Energy Community, Article 3 of the Treaty establishes a three-tier structure:

The first tier in Title II of the Treaty “The Extension of the *Acquis communautaire*” addresses the Contracting Parties alone. Under the Treaty, they have agreed to implement core parts of the EU *Acquis communautaire*, both sector-specific and general. The *Acquis* on environment to be implemented by the Parties includes: endeavouring to accede to the Kyoto protocol and implement the IPPC Directive,

as well as fully implementing the EIA Directive (upon entry into force of the treaty), Directive on reduction in the sulphur content of certain liquid fuels (by 31 December 2011), Large Combustion Plants Directive (by 31 December of 2017), and the Birds Directive (upon entry into force of the treaty). Title II also requires the Contracting Parties to adopt development plans with a view to bringing their energy sectors in line with generally applicable standards of the EU.

The second tier in Title III of the Treaty “Mechanism for operation of Network Energy Markets” addresses the Contracting Parties as well as seven EU Member States connected to the region, namely Austria, Bulgaria, Greece, Hungary, Italy, Romania and Slovenia. Title III contains provisions on creating mechanisms for long-distance transportation of Network Energy, adopting security of supply statements and promoting high levels of energy provision to citizens. It also urges the harmonization of market designs, mutual recognition of licenses and fostering free establishment of companies, fostering development in the areas of renewable energy sources and energy efficiency, as well as providing a framework for safeguard measures in the event of a sudden crisis. For the greater part, the provisions in Title III require implementation through measures taken or to be taken by the competent Energy Community institutions.

The third tier in Title IV of the Treaty “The Creation of a Single Energy Market” addresses the Contracting Parties as well as the entire European Community, i.e. to all Parties. Basically, it provides for the free movement of network energy and allows for further measures to be taken with a view to creating a single energy market. Furthermore, Title IV establishes an external energy trade policy and provides for a mechanism of mutual assistance between the Parties in the event of energy disruption.

Pursuant to the Treaty, the internal decision making mechanism lays on the Ministerial Council and the Permanent High Level Group (PHLG). The Energy Community also has a Forum on Electricity, Gas, Oil and Social issues. Additionally to the institutions set up by the Treaty, the Ministerial Council established Energy Efficiency (2007), Renewable Energy (2009), Environment (2010) and Energy Strategy (2011) Task Forces.

In order to update the Treaty in relation to the new Directives adopted by the EU and to set deadlines provided for in the various directives, the European Commission adopted the proposal of the Decision on the implementation of Directive 2001/80/EC, on the implementation of Chapter III, Annex V and Article 72(3) – (4) of Directive 2010/75/EU and

amending Article 16 and Annex II of the Treaty. The PHLG took note of the Commission's proposal at its 29th meeting in June 2013.

The proposal is being discussed in-depth by the Environmental Task Force based on a study to be prepared by the Secretariat. The PHLG agreed to continue and conclude its discussions on this issue at its meeting in October.

2.4 Relevant EU Directives

2.4.1 LARGE COMBUSTION PLANTS DIRECTIVE 2001/80/EC

This Directive, mentioned in the Energy Community Treaty repealed with effect from 1 January 2016, applies to combustion plants with a rated thermal input equal to or greater than 50 MW, irrespective of the type of fuel used (solid, liquid or gaseous). Its purpose is to limit the amount of sulphur dioxide, nitrogen oxides and dust emitted from large combustion plants each year. It set minimum emission limit values for those pollutants which need not to be exceeded in the national permits. It encourages the combined production of heat and electricity (cogeneration).

Combustion plants authorised between 1 July 1983 and 27 November 2002 and brought into operation no later than 27 November 2003 have to comply with the emission limit values laid down in Part A of Annexes III to VII for sulphur dioxide, nitrogen oxides and dust. Plants authorised after 27 November 2002 have to comply with the emission limit values laid down in Part B of Annexes III to VII for sulphur dioxide, nitrogen oxides and dust.

The Directive also required significant cuts in emissions at “existing plants”, i.e. plants authorised before 1 July 1987. These cuts were to be achieved by *1 January 2008*:

- by achieving compliance, plant by plant, with the emission limits applicable to plants authorised between 1 July 1983 and 27 November 2002 (Part A of Annexes III to VII), or

- through a national emission reduction plan applicable to the total emissions of the plants it covers.

The LCPD also foresees a tightening of the Emission Limit for the existing solid fuel powered LCP > 500MWth to 200 mg/Nm³ as from 1st January 2016.

Member States had to send the Commission their national emission reduction plan for existing plants by no later than 27 November 2003. These plans had to contain objectives, measures and timetables for attaining them, and a monitoring mechanism. The Commission published guidelines to help the Member States draw up their national plans.

The Directive allowed existing plants to be exempted from compliance with the emission limits and from inclusion in the national emission reduction plan on condition that the operator undertook not to operate the plant for more than 20,000 hours between 1 January 2008 and 31 December 2015. In addition, the Directive authorised derogations from compliance with the emission limit values for plants which burn specific types of fuel.

20

Member States had to ensure that waste gases from combustion plants are discharged via stacks high enough to safeguard human health and the environment. The methods for measuring emissions and the frequency of monitoring are set out in Annex VIII to the Directive. The same Annex contains the rules on establishing and keeping emission inventories for large combustion plants.

The Energy Community Treaty stipulates that the SEE countries should implement this directive by 31 December 2017 but doesn't set specific deadlines for implementation of the various articles of the Directive. The Commission proposal of the Decision on the implementation of Directive 2001/80/EC, on the implementation of Chapter III, Annex V and Article 72(3) – (4) of Directive 2010/75/EU and amending Article 16 and Annex II of the Treaty, proposes the following specific deadlines:

- 1 January 2018: all operating licenses for existing plants contain conditions relating to emission limit values for new plants or existing plants are subject to national emission reduction plans (Article 4(3) of Directive 2001/80/EC),
- the reference year for the national emission reduction plans is 2010,

- 31 December 2015: Date for submission of the national emission reduction plans to the Energy Community Secretariat,
- the timeframe for the Secretariat to evaluate the national emission reduction plans is nine months and three months for the Parties to communicate additional measures in case the evaluation of the Secretariat is negative.

2.4.2 INTEGRATED POLLUTION PREVENTION AND CONTROL DIRECTIVE 2008/1/EC

The IPPC Directive mentioned in the Energy Community Treaty remains applicable until 6 January 2014 when it is replaced by Directive 2010/75/EU on industrial emissions. It requires industrial and agricultural activities with a high pollution potential to have a permit. This permit can only be issued if certain environmental conditions are met, so that the companies themselves bear responsibility for preventing and reducing any pollution they may cause. Integrated pollution prevention and control concerns new or existing industrial and agricultural activities with a high pollution potential, as defined in Annex I to the Directive (energy industries, production and processing of metals, mineral industry, chemical industry, waste management, livestock farming, etc.).

In order to receive a permit an industrial or agricultural installation must comply with certain basic obligations. In particular, it must:

- use all appropriate pollution-prevention measures, namely the best available techniques (which produce the least waste, use less hazardous substances, enable the substances generated to be recovered and recycled, etc.);
- prevent all large-scale pollution;
- prevent, recycle or dispose of waste in the least polluting way possible;
- use energy efficiently;
- ensure accident prevention and damage limitation;
- return sites to their original state when the activity is over.

In addition, the decision to issue a permit must contain a number of specific requirements, including:

- emission limit values for polluting substances (with the exception of greenhouse gases if the emission trading scheme applies – see below);
- any soil, water and air protection measures required;
- waste management measures;
- measures to be taken in exceptional circumstances (leaks, malfunctions, temporary or permanent stoppages, etc.);
- minimisation of long-distance or transboundary pollution;
- release monitoring;
- all other appropriate measures.

In order to coordinate the permit process required under the Directive and the greenhouse gas emission trading scheme, a permit issued in compliance with the Directive is not obliged to contain the emission limit values for greenhouse gases if these gases are subject to an emission trading scheme, provided there is no local pollution problem. The competent authorities can also decide not to impose energy efficiency measures targeted at combustion plants which are subject to the ETS.

22

All permit applications must be sent to the competent authority of the Member State concerned, which will then decide whether or not to authorise the activity. The decision to license or reject a project, the arguments on which this decision is based and possible measures to reduce the negative impact of the project must be made public and sent to the other Member States concerned. The Member States must, in accordance with their relevant national legislation, make provision for interested parties to challenge this decision in the courts.

The Member States are responsible for inspecting industrial installations and ensuring they comply with the Directive. An exchange of information on best available techniques (serving as a basis for setting emission limit values) is held regularly between the Commission, the Member States and the industries concerned. Reports on the implementation of the Directive are drawn up every three years.

Regulation (EC) No 166/2006, which establishes a European Pollutant Release and Transfer Register (PRTR), harmonises the rules whereby Member States have to regularly report information on pollutants to the Commission.

2.4.3 INDUSTRIAL EMISSIONS DIRECTIVE 2010/75/EU

This Directive brings together Directive 2008/1/EC (the 'IPPC Directive') and six other directives in a single directive on industrial emissions, including the Large Combustion Plants Directive, which is replaced by IED between 2013 and 2015. It covers industrial activities with a major pollution potential, defined in Annex I to the Directive (energy industries, production and processing of metals, mineral industry, chemical industry, waste management, rearing of animals, etc.). The Directive contains special provisions for the following installations:

- combustion plants (≥ 50 MW);
- waste incineration or co-incineration plants;
- certain installations and activities using organic solvents;
- installations producing titanium dioxide.
- new activities compared to the IPPC Directive (e.g. certain types of waste treatment activities)

23

Any industrial installation which carries out the activities listed in Annex I to the Directive must meet certain basic obligations:

- preventive measures are taken against pollution;
- the best available techniques (BAT) are applied;
- no significant pollution is caused;
- waste is reduced, recycled or disposed of in the manner which creates least pollution;
- energy efficiency is maximised;
- accidents are prevented and their impact limited;
- sites are remediated when the activities come to an end, based on the baseline report required.

The IED has strengthened the BAT based component of permitting. Industrial installations must use the best available techniques to achieve a high general level of protection of the environment as a whole, which are developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions. Following the regular information exchange process between industry, Member States and NGOs promoting environmental protection – known as

the Sevilla Process – the European Commission adopts BAT conclusions containing the emission levels associated with the BAT which are translated in all the official languages of the EU. These conclusions shall serve as the reference for the drawing up of permit conditions. These BAT conclusions need to be implemented 4 years after publication of the relevant BAT Conclusions for the sector concerned. In specific cases the competent authority may set less strict emission limit values (ELVs) compared to the emission levels associated with BAT (BAT_{ael}), which shall be demonstrated on the grounds of disproportionate higher costs compared to the environmental benefits due to specific local conditions (Art. 15.4).

The permit must provide for the necessary measures to ensure compliance with the operator's basic obligations and environmental quality standards. These measures shall comprise at least:

24

- emission limit values for polluting substances;
- rules guaranteeing protection of soil, water and air;
- waste monitoring and management measures;
- requirements concerning emission measurement methodology, frequency and evaluation procedure;
- an obligation to inform the competent authority of the results of monitoring, at least annually;
- requirements concerning the maintenance and surveillance of soil and groundwater;
- measures relating to exceptional circumstances (leaks, malfunctions, momentary or definitive stoppages, etc.);
- provisions on the minimisation of long-distance or transboundary pollution;
- conditions for assessing compliance with the emission limit values.

Minimal requirements apply to combustion plants, waste incineration and co-incineration plants, installations using organic solvents and installations producing titanium dioxide. The emission limit values for large combustion plants laid down in Annex V to the Directive are generally more stringent than those in Directive 2001/80/EC for the smaller plant categories. A degree of flexibility similar to the LCPD (Transitional National Plan, limited life time derogation), desulphurisation rate is introduced for existing

installations. For other activities subject to special provisions, the provisions of the current directives have been largely maintained.

Member States shall set up a system of environmental inspections of the installations concerned. All installations shall be covered by an environmental inspection plan. The plan shall be regularly reviewed and updated. Based on the inspection plans, the competent authority shall regularly draw up programmes for routine environmental inspections, including the frequency of site visits for different types of installations. The period between two site visits shall be based on a systematic appraisal of the environmental risks of the installations concerned. It shall not exceed one year for installations posing the highest risks and three years for installations posing the lowest risks.

2.4.4 AIR QUALITY DIRECTIVE 2008/50/EC

This Directive is not mentioned specifically in the Energy Community treaty. But it is highly relevant to the future of coal in the SEE because it lays down measures aimed at the following:

- defining and establishing objectives for ambient air quality designed to reduce harmful effects on health and the environment;
- assessing the ambient air quality in Member States on the basis of common methods and criteria;
- collating information on ambient air quality in order to monitor long-term trends, in particular;
- ensuring that such information on ambient air quality is made available to the public;
- maintaining air quality where it is good and improving it in other cases;
- promoting increased cooperation between the Member States in reducing air pollution.

Member States shall designate the competent authorities and bodies responsible for evaluating the quality of ambient air, approving measurement systems, ensuring the accuracy of measurements, analysing assessment methods and cooperating with other Member States and the Commission.

This Directive establishes a system for the assessment of ambient air quality in relation to sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2.5), lead, benzene and carbon monoxide as well as ozone. Member States shall establish areas or zones (urban, suburban, rural, rural background) throughout their territory, and assess and manage the air quality. This Directive sets thresholds for assessment for each pollutant, criteria for the assessment method (in particular the siting of sampling points), reference methods for measurement, limit values for the protection of human health and the environment, the target and the obligation of reducing exposure for the population to PM2.5, information thresholds and alert thresholds, critical levels for the protection of vegetation and the list of information to be included in action plans for improvement in air quality. Each Member State shall set up at least one measuring station and may, by agreement with adjoining Member States, set up one or several common measuring stations.

26

Where the levels of pollutants in ambient air are below the limit values specified in this Directive, Member States shall maintain the levels of those pollutants below the limit values and shall endeavour to preserve the best ambient air quality, compatible with sustainable development.

Where, in given zones or agglomerations, the levels of pollutants in ambient air exceed any limit value or target value, plus any relevant margin of tolerance in each case, Member States shall ensure that air quality plans are established for those zones and agglomerations in order to achieve the predefined limit value or target value.

In the event of exceedances of those limit values for which the attainment deadline is already expired, the air quality plans shall set out appropriate measures, so that the exceedance period can be kept as short as possible and can include additional specific measures to protect sensitive population groups. Measures similar to those laid down in short-term action plans may be considered. Where there is a risk that the levels of pollutants will exceed the alert thresholds, Member States shall draw up action plans indicating the measures to be taken in the short term in order to reduce the risk or its duration. These actions plans can in particular suspend activities which contribute to the risk of exceedance (motor-vehicle traffic, construction works, the use of industrial plants etc.). In addition, these action plans may include specific measures aimed at the protection of sensitive population groups, in particular children.

Where thresholds are exceeded due to transboundary transport of air pollutants, the Member States concerned shall cooperate and coordinate their work in order to remove the exceedance.

Member States shall ensure that up-to-date information on ambient concentrations of the pollutants covered by this Directive is routinely made available to the public and the bodies concerned. Where alert thresholds and information thresholds are exceeded, Member States shall publish:

- information on the exceedance or exceedances observed (place, type of threshold, time and duration of the exceedance, highest concentration observed);
- forecasts for the following hours and days;
- information on the type of population concerned, possible health effects and recommended behaviour;
- information on preventative measures and measures to reduce the emissions.

Member States shall also make available to the public annual reports for all pollutants covered by this Directive.

Member States shall lay down the rules on penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all measures necessary to ensure that they are implemented. The penalties must be effective, proportionate and dissuasive.

2.4.5 WATER FRAMEWORK DIRECTIVE (2000/60/EC)

This Framework-Directive has a number of objectives, such as preventing and reducing pollution, promoting sustainable water usage, environmental protection, improving aquatic ecosystems and mitigating the effects of floods and droughts. Its ultimate objective is to achieve “good ecological and chemical status” for all Community waters by 2015.

Member States have to identify all the river basins lying within their national territory and to assign them to individual river basin districts. River basins covering the territory of more than one Member State will be assigned to an international river basin district.

Member States are to designate a competent authority for the application of the rules provided for in this Framework-Directive within each river basin district.

By 2004 at the latest, each Member State had to produce:

- an analysis of the characteristics of each river basin district;
- a review of the impact of human activity on water;
- an economic analysis of water use;
- a register of areas requiring special protection;
- a survey of all bodies of water used for abstracting water for human consumption and producing more than 10 m³ per day or serving more than 50 persons.

This analysis must be revised in 2013 and every six years thereafter.

28

In 2009, nine years after the Framework-Directive entered into force, management plans were produced for each river basin district, taking account of the results of the analyses and studies carried out. These plans cover the period 2009–2015. They shall be revised in 2015 and then every six years thereafter.

The management plans had to be implemented in 2012. They aim to:

- prevent deterioration, enhance and restore bodies of surface water, achieve good chemical and ecological status of such water by 2015 at the latest and to reduce pollution from discharges and emissions of hazardous substances;
- protect, enhance and restore the status of all bodies of groundwater, prevent the pollution and deterioration of groundwater, and ensure a balance between groundwater abstraction and replenishment;
- preserve protected areas.

The management plans for river basin districts can be complemented by more detailed management programmes and plans for a sub-basin, a sector or a particular type of water.

Temporary deterioration of bodies of water is not in breach of the requirements of this Framework-Directive if it is the result of circumstances which are exceptional or could not reasonably have been foreseen and which are due to an accident, natural causes or force majeure.

Member States shall encourage participation by all stakeholders in the implementation of this Framework-Directive, specifically with regard to the management plans for river basin districts. Projects from the management plans must be submitted to public consultation for at least 6 months.

From 2010, Member States must ensure that water pricing policies provide adequate incentives for users to use water resources efficiently and that the various economic sectors contribute to the recovery of the costs of water services, including those relating to the environment and resources.

Member States must introduce arrangements to ensure that effective, proportionate and dissuasive penalties are imposed in the event of breaches of the provisions of this Framework Directive.

A list of priority substances selected from among the ones which present a significant risk to the aquatic environment has been drawn up at European level. This list is set out in Annex X to this Framework-Directive.

Following Article 16(7) of the Water Framework Directive, the EQS Directive² sets out environmental quality standards concerning the presence in surface water of certain pollutants and substances or groups of substances identified as priority on account of the substantial risk they pose to or via the aquatic environment. The Water Framework Directive establishes a list of 33 priority substances including cadmium, lead, mercury, nickel and its compounds, benzene, polyaromatic hydrocarbons (PAH) and DDT total. Twenty priority substances are classed as hazardous.

The planned environmental quality standards are limits to the degree of concentration, i.e. the quantity in water of the substances concerned must not exceed certain thresholds. Two types of standard are proposed:

- the average value or concentration of the substance concerned calculated over a one-year period. The purpose of this standard is to ensure the long-term quality of the aquatic environment;

2 Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC .

- the maximum allowable concentration of the substance measured specifically.

The purpose of this second standard is to limit short-term pollution peaks.

The quality standards are differentiated for inland surface waters (rivers and lakes) and other surface waters (transitional, coastal and territorial waters). Specific standards are also set for metals and certain other substances.

Member States must ensure compliance with these standards. They must also verify that the concentration of substances concerned does not increase significantly in sediments and/or the relevant biota.

The Directive also provides for Member States to establish transitional mixing areas, where the quality standards may be exceeded provided that the rest of the surface water body complies with those standards. These areas must be clearly identified in the river basin management plans established in accordance with the Water Framework Directive.

30

For each river basin, Member States must establish an inventory of emissions, discharges and losses of all substances identified in this Directive. On the basis of this inventory, the Commission must verify whether, by 2018, the objectives of gradually reducing pollution from priority substances and of ceasing or phasing out emissions, discharges and losses of priority hazardous substances are reached.

3. COUNTRY CASE STUDIES

3.1 Bosnia and Herzegovina

31

Bosnia and Herzegovina (BiH) has four coal fired power plants with nine functioning units (four in Tuzla, three in Kakanj, one in Ugljevik and one in Gacko), with total installed power of 1765 MW. All the units were built before 1990, some of them for the purpose of supplying other republics of federal Yugoslavia with electricity. The TPPs produce around half of the electricity in the country and the rest is produced by hydropower. In 2009 BiH exported around 257 ktoe of electricity.

According to current strategic documents of the entities, domestic coal will remain the main source of electricity generation. On one hand, there are significant available resources of coal, and on the other hand coal is a traditional sector in BiH which employs a large number of people.

In 2005, the TPPs emitted 199,097 tonnes of SO₂, 24,790 tonnes of NO_x and 13,102 tonnes of particles. In 2012, the Tuzla and Kakanj power plants alone emitted 135,343 tonnes of SO₂, 16,059 tonnes of NO_x and 5687 tonnes of particles. The morbidity rate of chronic obstructive pulmonary diseases in the Federation of Bosnia and Herzegovina is around 150/100,000. Highest air pollution is in the cities and towns close to the thermal power plants, partly from the power plants and partly from burning coal for home heating.

So far, there has been limited progress in the transposition of the Air Quality Directive. The Federation of BiH has adopted an Integrated strategy of environmental protection with the Action plan that includes a Strategy for air protection. The Federation

BiH adopted the Law on Amendments of the Law on Air Protection. Republika Srpska has developed a Draft strategy for air protection with an Action plan. In the field of air protection in Brčko District was passed Rulebook on limit and target values, which was forwarded to the Government of the Brčko District of BiH to adopt. Implementation of this Directive has yet to begin. In the previous EU accession progress monitoring reports it was stated that full implementation would be achieved in 2012. But the current report states “not determined yet”.

The IPPC Directive is conditionally transposed through the Law on Environmental Protection (LEP) which is harmonized for both Entities (FBiH and RS) and the Brčko District (BD). The LEP introduces the concept of “environmental permit” and “environmental permitting”, which are equivalents of the terms “IPPC permit” and “IPPC permitting”. An official estimation of number of installations has not been realized in BiH. According to data, 122 environmental permits were issued by the Federal Ministry before 2009. The small number of IPPC installations is explained by the fact that BiH installations mainly fall into the category of small and medium enterprises. For this reason, the threshold limits from Annex I of the IPPC Directive are significantly lower in the national legislation – to suit local conditions. The Ministries responsible for the environment in both Entities have issued several integrated environmental permits for installation having smaller capacity than those defined in Annex I of the IPPC Directive.

All existing TPPs are to be decommissioned between 2015 and 2030. For the period till then, rehabilitation plans have been prepared for the existing units to comply with the LCP/IE Directive, involving 181 million Euro costs for modernisation and 87.8 million for pollution reduction. Taking into account the economic and financial effects, the effects of SO₂ (for meeting LCPD), the possibility of approval of implementation deadline, as well as the risks of delays in the implementation of new replacement blocks in TPP Tuzla and Kakanj several scenarios of these investments were developed by the EPBiH. The proposed optimal scenario costs 45 million Euro and involves:

- expansion of cogeneration TPP Tuzla and Kakanj, to the current study concept and development plans of EPBiH,
- implementation of combustion with waste wood biomass, according to the development plans of EPBiH,
- installation of DeNOx plant on block 7 in TPP Kakanj,
- installation of DeSOx plant on block 7 in TPP Kakanj,
- installation of DeSOx plant in block 6 in TPP Tuzla.

This package, that could be the basis for the National Emission Reduction Plan, includes measures to achieve emission targets for solid particles already in 2018, emissions of NO_x in 2021 and emissions of SO₂ in 2026 through a combination of cutting production, phase out of units and investment in desulphurisation.

According to the Strategic plan of the development of the energy sector in the Federation of BiH (SPP), as well as information from the public enterprises dealing with electricity production, in the period until 2025, construction of 2300 MW of coal TPP is planned compared to existing installed capacity of 1165 MW. This means that capacity may double in case of implementation of all the investments. In Republika Srpska (RS) the strategy predicts construction of about 600 MW of new TPPs, but this includes only capacities where the investor is public company Elektroprivreda RS (in cooperation with partners). In addition, private investors are to build 300 MW. Existing capacity in RS is 600 MW.

From the above plans it can be concluded that until 2025, 3200 MW of TPP could be constructed in Bosnia and Herzegovina as a whole. This capacity would nearly double the existing 1765 MW. These new power plants would be built with Best Available Techniques (BAT) which requires at least 40% of efficiency compared to 30% of the existing plants. But even though the electricity consumption in BiH is increasing, a large portion of the increase of capacity is obviously intended for export to the neighbouring countries and the EU market.

Such increase in capacity would increase the carbon emissions by 4.85 million tonnes CO₂ annually for the next half century. The Climate Change Adaptation and Low-Emission Development Strategy for Bosnia and Herzegovina sets the following overall emission reduction goal: "Achieve a peak in Bosnia and Herzegovina's greenhouse gas emissions around 2025 at a level that is below the EU27 average per capita emissions". This is based on the fact that per capita emissions of Bosnia and Herzegovina are among the lowest in Europe – 5.18 t CO₂ equivalent per capita per annum in 2008 and that according to the principle of common but differentiated responsibility, BiH has the right to increase its emissions to secure its economic development. But at the same time, greenhouse gas emissions per unit of GDP (1.59 kg CO₂ equivalent per EUR in 2008) are high – almost four times higher than those in the EU (0.4 kg/EUR). These statistics illustrate the economic and social challenges for Bosnia and Herzegovina, caught in the poverty trap with low emissions, but even lower GDP per capita. Because of this,

the Strategy, while allowing for an increase in total emissions, puts priority on increasing levels of energy efficiency, greater renewable energy use, and improved energy and transport infrastructure and services that should lead to international investment, job creation and business enterprise in a resource-efficient economy. The Strategy was drafted in 2012 and so far has been adopted by the Government of Republika Srpska.

There is significant potential for energy efficiency and renewable energy in Bosnia and Herzegovina, especially in terms of biomass (a large portion of the land was abandoned during the war and is now under forest). Biomass is already being exported and could cover all the heating needs of the country assuming that it is burnt in clean and efficient way, and that the energy efficiency of buildings is improved. There is also potential in wind, solar energy, geothermal and small hydropower. Bosnia's first wind park and first solar power plant are in operation from 2013. It is estimated that 400 to 600 MW of wind power capacity could be installed in the next few years. The photovoltaic systems will most probably have to wait until the price comes to an acceptable level, but after that there is significant potential. In geothermal, there is both potential for deep, high temperature, and shallow low temperature systems for heating of buildings.

3.2 Serbia

Serbia is the largest electricity system in the region with some 62% of electricity generated from lignite from the Kolubara and Kostolac mining basins. Due to lack of regular maintenance during period 1990–2000, TPPs were the main threat to power system operational security. However, the reliability of Serbian thermal power plants has been significantly improved in the last 4–5 years. Significant improvements in the availability of the TPP units has been achieved at Kolubara TPP (from 19.9% to 50.8%) and TPP Kostolac A (from 15.6% to 75.8%). This project was funded by the EU and the EBRD.

Further modernisation is foreseen in units A3 to A6, B1 i B2 in TPP „Nikola Tesla“(TENT), as well as in both units of TPP „Kostolac B“. Total installed power of these units is 3160 MW, and average annual production 19,000 GWh. Seven units are planned to be shut down successively (TENT A1 and A2, „Kostolac“ A1 and A2, TPP „Morava“, TPP „Kolubara“ and Panonic powerplants) between 2018 and 2024. These units are over 45 years old, with efficiency at 25 – 30%. Average annual production of units for decommissioning is around 6000 GWh, which means that new generating capacity needs to be added to the system.

According to the Health and Environment Alliance (HEAL report entitled The Unpaid Health Bill: How Coal Power Plants Make Us Sick) Serbian coal-fired power plants contribute substantially to industrial air pollution and related ill-health in Europe. The assessment commissioned by HEAL found that the emissions of sulphur dioxide, nitrous oxides and particulate matter coming from Serbian coal-fired power plants might be causing 2100 premature deaths every year, and lead to health costs of EUR 1.8 – 5 billion. In terms of health impacts or health costs from coal power generation Serbia ranks number five of 30 countries in Europe. The upper bound health costs corresponds to 680 Euro per capita per year and, compared to the amount of electricity produced from coal and lignite in Serbia, the figure of 21.5 EUR cents per kWh in external costs to health is even much higher than the prices consumers pay for electricity.

According to the Draft of Energy Strategy until 2025 with projections until 2030, 350MW of coal fired power plants are to be built by 2020 and 700 MW by 2025, as well as 400 MW of cogeneration plants using natural gas. This is a significant reduction from the previously planned 1.5 GW of new capacity planned in the strategy 2005 to 2015.

In addition to coal, investment in production of electricity from RES is envisaged: Wind power plants with 300 MW capacity, 42 MW hydropower (<10 MW) and 5MW of solar plants will be built by 2015. By 2030 it is planned to build the following RES capacity: 600 MW wind power plants, 400 MW hydropower (<10MW), 350 MW hydropower (>10MW), 80 MW power plants on biogas, 5 MW geothermal power plants, 200 MW biomass power plant, 200 MW solar power plants. According to current estimates for the development of renewables, Serbia will exceed its 27% target for 2020 and reach a share of 27.3%. It is foreseen that electricity which will be produced from ten new Serbian small hydro power plants (up to 10 MW) will be exported in Italy.

Electricity consumption in Serbia is constantly rising. Data for annual gross consumption in the period 2008–2010, related to economic crisis environment, was 39,357 GWh, 40,264 GWh and 41,213 GWh respectively. It is important to highlight that households cover more than 50% of consumption and that electric heating is still widely used due to regulated low electricity prices, causing a big difference between summer and winter consumption. Funds for stimulating the production of energy from renewable sources will be provided by increasing the price of electricity, the costs of which are transferred to the consumers.³

In order to implement the LCP and IED Directives in the new thermal power plants and those that will be revitalized, TPPs will need to install desulphurisation, denitrification of flue gases, and high efficiency electrostatic precipitators. Serbia is currently exploring whether the flexibility mechanisms of the opt-out or the Transitional National Plan (TNP)⁴ could be used under the IED framework. In Energy Community meetings, Serbia has stated that realistically, the emission limit values will not be implemented from 1 January 2018 on a plant-by-plant basis but rather a National Emission Reduction Plan (NERP) with almost all plants included in it. As regards the reference year for the NERP, Serbia proposed to the Energy Community Treaty Secretariat the year 2012 rather than 2010 (as in the Commission's proposal) arguing that the 2012 is a more representative year for the energy sector of the Republic of Serbia. With reference to the NERP, Serbia asked whether a timeframe, 2018–2026, for its application could be envisaged, to mirror its time span of application in the EU (2008–2016). In its reply, the Commission

3 Draft strategy for development of energy sector of Serbia, 2025 with projections 2030

4 Energy Community Task Force on Environment 5th Meeting, 16 May 2013
Conclusions

stated that postponing the application of the IED provisions would risk triggering a lot of regretful investments.

Finally, the Republic of Serbia asked whether it would be possible to have it officially recorded that agreeing to the inclusion of the IED provisions in the Treaty by a given date would leave open the possibilities to negotiate longer transitional periods in the context of accession negotiations with the EU or whether in the above-mentioned context it is possible at this moment to put forward a remark that some specific plants should be part of future negotiating processes with the EU in the framework of the accession negotiations.

In October 2011, the Government of the Republic of Serbia adopted a document entitled “National Environmental Approximation Strategy of the Republic of Serbia” which contains economic analyses of approximation. The result of those analyses showed that the year 2023 is the first possible year for the Republic of Serbia to be in compliance with the LCP Directive (so-called “heavy investment directive”), implying that compliance with the IED will be more difficult and will require more time. This document however does not take into account that as a signatory to the Energy Community Treaty, Serbia is committed to ensuring that its thermal power plants comply with the emissions requirements of the EU Large Combustion Plants Directive by 31 December 2017. The IPPC Directive is fully (100%) transposed into the Law on IPPC and the relevant by-laws. Full implementation depends on the IPPC permitting process.

With amendments to the Regulation on the conditions and requirements for air quality monitoring (Official Gazette of RS, 11/10 and 75/10) planned for 2013, full transposition of the provisions of Directive 2008/50/EC will be accomplished, with the exception of the provisions relating to progress reporting to the European Commission. A strategy to combat climate change with an action plan 2013–2015 is under construction. The Strategy includes plans and activities to analyze current facts and actions which will reduce emissions of GHG.

According to the Initial National Communication of the Republic of Serbia under the United Nations Framework Convention on Climate Change of 2010, the total emissions of GHG in 1998, disregarding the net removed amounts of CO₂ in forests, amounted to 66,346 million tonnes of CO₂eq. The greatest share in the total emissions, amounting to 76.19 % (50,549 Mt CO₂eq), was contributed by the energy sector. Projected changes in the structure of energy production (RES which will amount to 27% according to

recent governmental plans and a significant share of natural gas), the withdrawal of old inefficient plants, and reducing losses in transmission and distribution will lead to significantly lower specific GHG emissions from this sector.

The climate change problem has only been recognized in the past few years as a multi-sectoral problem that needs to be included in sector strategies and national development strategies in general. This was confirmed by the ratification and enforcement of the Kyoto Protocol in 2008. Considerable effort in the context of combatting climate change was brought about by the beginning of the process of EU accession and the harmonization of national legislation with that of the EU. A certain number of newly adopted, strategic documents, such as the Sustainable Development Strategy (adopted in 2008) and the National Environmental Protection Programme (2010), treat the climate change problem as being very important.

38

Increasing energy efficiency and the use of renewable energy resources by 2015 are two of five main priorities in the Serbian Energy Sector Strategy Development. The Forestry Development Strategy includes the UNFCCC among the most important international obligations within the sector. The need for a constant increase in the forest capacity level is emphasized as an objective to more efficient climate change mitigation.

In the Serbian Strategy for Scientific and Technological Development, environment protection and climate change is one of the seven priority areas to receive funding in the period 2011–2015. The National Strategy for Biodiversity and the Action Plan affirm the importance of developing a national strategy and mechanisms in order to understand, plan and minimize possible effects of climate change on biodiversity.

3.3 Montenegro

Montenegro is a small energy system with a single 218 MW thermal power plant in Pljevlja burning lignite from open cast mines in Pljevlja. According to the EPCG⁵, the total demand for electricity in Montenegro dropped from 4.2 TWh in 2011 to 3.6 TWh in 2013. Out of this, around 1.4 TWh is produced in TPP Pljevlja; and 1.2 to 1.7 TWh by hydropower plants Peručica and Piva. Around 1.1 TWh a year is imported from Serbia's TPPs as compensation for the peak electricity supplied to Serbia from the Piva hydro dam. The biggest single consumer of electricity has been the Aluminium Combine of Podgorica (KAP) that used 1.4 TWh in 2011 and was planning to use 0.7 TWh in 2013. The rest is consumed in the general distribution and some other industries. Because of the drop in production of KAP in 2013 Montenegro has no deficit of electricity.⁶

In 2007 the Government of Montenegro adopted the Energy Development Strategy of Montenegro until 2025 and the Action Plan for Energy Development until 2025. One of the strategic commitments of the two documents is to:

- Rely on the exploitation of domestic coal reserves as the second important energy resource of Montenegro besides hydro-energy; the construction of TPP Pljevlja 2 and the heating system in town Pljevlja. In addition, there is a possibility to construct TPP Berane if the investment is proven to be economically profitable;

After the adoption of the strategy, in 2010, the Government signed an agreement with Italy to build an undersea cable with capacity of 1000 MW, the purpose of the cable being importing electricity to Italy from Montenegro and neighbouring countries. In the same year, the Government launched two tenders for electricity generation concessions: one for a new 500 MW TPP in Maoče near Pljevlja and for the hydro power exploitation of the river Morača (240 MW, 694 GWh annual production). Both tenders were unsuccessful. A French company applied for the TPP construction, but didn't meet the conditions set by the Montenegrin Government.

In 2005 and 2009 Montenegro adopted the Law on Integrated Pollution Prevention and Control which regulates the IPPC permitting procedure, use of BAT and sets require-

5 http://www.epcg.co.me/pdf/01_03_02/energetski%20bilans%202013.pdf

6 The Energy Balance of Montenegro for 2013 (<http://www.minekogov.me/organizacija/energetika/118704/Energetski-bilans-Crne-Gore-za-2013-godinu-sa-zakljuccima.html>)

ments to operators in case of changes or closure of the plants. The Law on Air Protection (OG 25/2010) regulates air protection in general, and establishes a legal basis for setting national emission limit values. While the Decree on Emission Limit Values from Stationary Sources (OG 10/2011) (ref: Decree) covers a broad spectrum of emission limit values, including emission limit values from large and medium combustion plants. In its transitional and final provisions the decree defines existing plants as those put into operation by 21 January, 2011 (entry into force of this Decree). These plants are granted a derogation period on compliance with the emission limit values until December 31, 2025, and are given the possibility to exceed the ELVs until the given date by maximum 250%. The Environment Protection Agency (EPA) is the competent body for implementation of the above mentioned legal acts.

As the TPP Pljevlja is the only thermal power plant in Montenegro, the share of this emitter in total emissions of CO₂ is high. In 1990, the TPP Pljevlja emitted 1314.80 Gg CO₂ or 52.8% of total emissions from the energy sector, according to the First National Communication to UNFCCC.

In 2009, an electrostatic precipitator and low NO_x burner were installed at TPP Pljevlja. During 2012, the daily mean values of the particles exceeded the threshold value (50 mg/m³) for 217 days (out of 338 days of valid measurements), in Pljevlja. In the same period the values exceeded the tolerance limit of 110 days.⁷ The Government of Montenegro has established a National network for monitoring air quality. Although no official assessment of the impact of emissions from the TPP Pljevlja on the health of the nearby population exists, an Air Quality Plan for the municipality of Pljevlja was adopted in February 2013.⁸

The Government of Montenegro plans to build another block of the existing thermal power plant Pljevlja. The capacity will be at least 220 MW. The project will be implemented by the state energy company EPCG⁹ and should lead to adherence to of the pollution limits. Otherwise (if the new TPP will not be realized) technical and financial analyses relating to the modernization of TPP will be developed.

The study Estimating Health Risks caused by Emissions of Air Pollutants from Coal Fired Power Plants in Europe – Documentation of Methods and Results conducted by the

7 Study for new block in TE Pljevlja (internal doc of MANS)

8 Technology Needs Assessment for Climate Change Mitigation and Adaptation for Montenegro + Study for new block in TE Pljevlja (Internal doc of MANS)

9 The Draft Energy Development Strategy in Montenegro by 2030 (Green Home)

University of Stuttgart in 2013 also includes the two new proposed units Pljevlja II and Maoče, but not the existing powerplant. The estimated health impact of Pljevlja II is 16 years of life lost annually and of Maoče 348 years of life lost. Together with the workdays lost, the health cost of these two units would be some 20 million Euro per year even though they are supposed to comply with the EU directives.

The Energy Strategy also includes chapters on energy efficiency and renewable energy sources. The potential of both energy efficiency and renewables is recognised, but no specific targets are set for energy efficiency. For renewables, a target of a minimum share of 20% is set, which is significantly lower than the existing share of hydropower and biomass. The renewables with largest potential in Montenegro are hydro, solar and wind power, as well as biomass which already covers most of the energy demand for heating in the country.

In the meantime, Energy Efficiency Action Plan for 2008–2012 was adopted by the Government of Montenegro in 2008 with no clearly defined national energy savings targets. To correct it, the Law on Energy Efficiency was adopted in April 2010, setting obligations related to adoption of energy savings indicative targets, in accordance with Directive 2006/32/EC. The Energy Efficiency Action Plan for the period 2010–2012, was adopted by the Government of Montenegro in December 2010. The Ministry of Economy is implementing this Action plan together with donors through an energy efficiency programme including projects such as:

- MEEP – Montenegrin Energy Efficiency Project
- EEPB – Energy Efficiency Program in Public Buildings
- MONTESOL – Interest-free credit line for installation of solar-thermal systems for households
- SOLARNI KATUNI – Project related to installation of photovoltaic solar systems in summer pasture lands
- GIZ-ASE – Project of Energy Efficiency Improvement in Montenegro
- TA-EnCT – Technical assistance for the implementation of the Energy Community Treaty

These projects, totalling 25 to 30 million Euro in grants and loans are already bringing the initial results in terms of developing both supply and demand for energy efficiency and renewables in the country.

4. DISCUSSION

Looking at the regional and national energy strategies and other policy documents and at developments in the recent years, one can see that several driving forces are at work in relation to decisions concerning the future of coal in the SEE countries:

- **Economic and social inertia of the coal mining and power sector:** The electricity generation companies (public or partially privatised) have strong financial resources and professional capacities compared to the government institutions, civil society or businesses involved in energy efficiency and renewable resources. They benefit from the heavy explicit and implicit subsidies such as: preferential access to natural resource, cross-subsidies from hydropower, direct budgetary support, government ownership, import/export restrictions, information, loan guarantees, price control, purchase requirements, research and development, preferential regulations, government cover of the risks and tax exemptions. They also have good professional contacts to the international market. This enables them to prepare and implement investment projects faster and in a more professional manner than other stakeholders in the countries. They also have high public and political visibility and influence, being some of the largest companies, and electricity supply being one of the crucial services for everyday life of citizens and the functioning of the economy.
- **Ambition to mobilise international capital for inward investment** with a view of large construction projects boosting the local economy: The EU requirements for environmental clean up of the Large Combustion Plants, the presence of international power utilities on the market and availability of both grants and lending from the IFIs such as World Bank, EBRD and EIB create an opportunity to generate large scale investment projects that may have positive short term impact on domestic economy in terms of capital flows on the stock market, construction works and supplies and increasing tax revenues. The long term consequences of repayment of the investments through higher consumer

prices and/or repayment of loans by the taxpayer are considered remote and less important than the short term gains.

- **Opportunity to sell surplus electricity on the European common market:**

There is demand for surplus electricity in the neighbouring EU countries, generating revenue flows for the power generating companies that are not linked to regulated domestic prices. The apparent advantage of SEE countries is that investments into modernisation or new generating capacity are cheaper and less demanding in terms permitting which makes investment in electricity in SEE a lucrative prospect.

- **EU accession process driving the changes in legislation and formal commitments to the various EU policies and objectives:**

With one of the main general political objectives being Accession to EU, the government administrations are in the process of transposition and implementation of the *Acquis Communautaire*. With the limited administrative capacity and high complexity of the legislation this process lacks domestic consultation and feasibility analysis of different legal requirements, leading to mechanical translation of legal acts and sometimes unrealistic commitments in terms of implementation of legal provisions and subsequent frequent changes in the legislation as the deficiencies emerge.

- **Bilateral donors and the EU covering the costs related to EU accession process.**

The availability of EU and bilateral donor funding for the technical assistance and investments related to EU accession, including promotion of energy efficiency and renewable energy create an impression that most of the costs of EU harmonisation will be carried by external sources of funding and that domestic funds can continue to be used for other purposes. This is leading to parallel worlds of donor programmes and projects trying to implement EU legislation and objectives vs. domestic budgets and policy keeping the status quo.

The result of all these driving forces is that the SEE countries, while formally committing to compliance with the EU *Acquis* and objectives, are planning large scale new coal fired power plants even if they cannot afford them and if environmentally and economically more preferable options are available. It also seems that these decisions are based on the trends from before 2008: the high growth

in domestic and international demand for electricity and ready availability of investment capital from both private and public sources.

The transition arrangements for the implementation of the EU directives under the Energy Community under discussion and the status of SEE countries as non-Annex I under the UNFCCC, (providing for the right to increase carbon emissions), seem to create a window of time for construction of a new set of coal fired power plants in South East Europe. The SEE countries together with their power utilities seem to be taking advantage of this opportunity by planning for large investments in new thermal power plants in the Energy Strategy of the EnCom.

On the other hand it seems that the following aspects are missing from the considerations. The most important ones are:

- **The need of local populations for clean air and overall environmental quality:** Air quality in the SEE mining regions and urban areas is among the worst in Europe, with heavy associated health and economic costs. But instead of being a cause for policy action (e.g. implementing the Air Quality Directive) and investment, this fact is met with apathy and a hope that EU accession will somehow take care of the problem by itself, or that partial improvement through power plant modernisation or replacement is better than nothing. This argument is exploited in promotion of virtually all proposed TPP investments, even if they are not really designed to best available technology standard.
- **The opportunity of energy efficiency and renewables for domestic technological development and green economy.** Most of the equipment for large combustion plants would be imported, meaning that most economic benefits from investment would flow abroad. On the other hand, energy efficiency and renewables technologies can readily be mastered by domestic businesses in terms of equipment and especially services, meaning that a high proportion of the investment stays within the local economy. The problem is that these businesses are small, scattered and not well organised in representing their interest.
- **Possible shifts in demand for electricity due to higher prices:** At present, the end user electricity prices in SEE countries are unsustainably low. At the same time future demand projections seem to be simple extrapolations of trends in correlation with expected GDP growth. Changes in consumption due to higher

consumer price (replacing electric heating or better building insulation) or in industry, such as drop in energy demand from heavy industry (e.g. aluminium in Montenegro) are not taken into account.

If we compare the investment options of building new coal fired power plants or installing pollution control in the existing ones with the current annual costs of burning coal to the economy (health costs and subsidies) it becomes obvious that coal should be phased out as soon as possible.

Table 4: Comparison of annual costs of coal to economy with the investment options

Country	Annual health costs EUR	Annual level of subsidies for fossil fuels in 2009 EUR	Investment in pollution control in existing TPPs EUR	New investments planned EUR
Bosnia and Herzegovina	0.5 – 1.3 bn	1.1 – 1.2 bn	270 m	1.75 bn
Montenegro	50 – 140 m	290 – 320 m	127 m	175–267 m
Serbia	1.8 – 5 bn	2 – 2.5 bn	634 m	7.89 bn

Sources: The Unpaid Health Bill: How Coal Power Plants Make Us Sick HEAL, Energy Strategy of the Energy Community, Ref: 10thMC/18/10/2012 – Annex 19/27.07.2012; Fossil fuel subsidies in the Western Balkans, UNDP RBEC Bratislava 2011, National strategic documents. No separate figures for coal are available but they are thought to make up the majority of fossil fuel subsidies in the countries concerned. The health cost estimates for BiH and Montenegro are extrapolated from the Serbian estimate in linear relation to coal based electricity production per capita.

The planned increase in generating capacity by building new power plants would lead to continued subsidies and emissions for at least 40 years. Even if the pollution is reduced by 90 % compared to the present levels, the annual health costs would remain at a level between 250 and 650 million annually, meaning that total negative effects (external costs) of coal would remain at between 3.6 and 4.7 billion Euro in the three countries. Basically, the three countries would pay 10 billion Euro in order to loose another 160 billion in the lifetime of the powerplants.

Investing in pollution control and then closing the existing powerplants in the next 10 years would cost 1 billion in investment and would cause "only" some 40 billion external costs until their closure, but reducing the negative health effects much sooner than waiting for new plants to be built.

New coal technologies might be an improvement in security, efficiency and environmental impact compared to the existing situation, but building new thermal power plants locks in the capital, emissions, external costs and the structure of the energy sector for four or five decades, well beyond the expected date of EU accession of the SEE countries and beyond the EU target of decarbonising the power sector by 2050.

From the point of view of any aspect of sustainability, investment in coal is not the smart thing to do in the current rapidly changing context of oversupply of electricity in Europe and dropping costs and prices of renewables. The problem is demonstrated by the recent investment in the Šoštanj TPP in Slovenia that has become stranded before its completion. As demonstrated by the Slovenian example of TEŠ 6, they also present a risk for different forms of corruption including state capture.

46

In the current situation, the costs will one way or the other end up with the taxpayer either (or both) from the SEE countries or from the current EU. This will happen through charging amortisation of new plants in the consumer prices of electricity, through public funds carrying the burden of externalities (health costs, environmental degradation, mine closure, economic and social rehabilitation of mining regions) and/or through government guarantees for the loans.

In the context of rapidly developing energy efficiency and renewables technologies, there are more economic options for securing electricity supply and cutting air pollution, including energy efficiency in buildings and change of heating technology (district heating and cogeneration, using biomass or natural gas, cleaner burning). These changes are creating opportunities for leapfrogging – moving to the latest technologies in the SEE countries. This would cut costs in the long term and spur green growth. The first pilot actions in this respect are already being implemented in the framework of various donor programmes in the region and could be mainstreamed faster than construction of new thermal power plants.

Case of Šoštanj TPP – Unit 6

Šoštanj (TEŠ) is the largest Thermal Power Plant in Slovenia, with five units using lignite from the local Velenje mine. In 2006, Slovenian Government included a new unit of the TPP (TEŠ 6) into its programme of investment projects to boost the Slovenian economy between 2007 and 2013. At the time, the projected investment value of the project was 600 million EUR for the 600 MW Unit and the project was listed as a possible public private partnership project. The project is to be finished in 2014. TEŠ 6 replaces units 1–4 and in will achieve compliance with the emission limit values of the Industrial Emission Directive. It will also reduce the overall carbon emissions of TEŠ by 1.2 Mt CO₂ eq. per year. But the emissions od around 2 Mt (10% of present Slovenian emissions of TGP) would continue until the end of life of TEŠ 6 in 2054. The economics of the project were based on a decreasing price of local coal, assuming that the long term operation of the mine would lead to additional reductions in costs through modernisation.

Instead of looking for private investors, the Holding of Slovenian Electricity Generation Plants (HSE), the state owned holding company owning TEŠ entered negotiations with the EBRD and EIB for loans to cover the investment. The balance of the investment was to come from the profits generated by the hydro-electric units of the HSE. By 2010 the estimated investment cost increased to 1.1 billion Euro (300 million from HSE, 100 million from TEŠ, 550 million from the EIB and the rest from the EBRD, commercial banks and equipment suppliers). Because of this increase in price and increase in requested loan, the EIB required a government guarantee for the loan, which was approved by the parliament after heavy public discussions in 2012. The vote in the parliament didn't follow the party lines. In the meantime the estimated cost of the project rose to over 1.4 billion Euro.

In 2012, the Slovenian Anti-corruption Commission issued an interim opinion that the project had been conducted in a non transparent way, with lacking supervision and is burdened with political and lobbying influences, which created high risks of corruption and conflict of interest. In summer 2013 the Slovenian Government adopted an opinion regarding the investment in TEŠ 6 in view of lowering prices of electricity on the EU market and in view of increased price of coal from the Velenje mine, which make the investment economically unsustainable. Among others, the Government asked the Court of Auditors to investigate the project and the State Attorney's Office to prepare a report on legality of actions of the leadership of HSE and TEŠ and in case of irregularities take appropriate legal action to protect the interest of the Republic of Slovenia.

5. CONCLUSIONS AND RECOMMENDATIONS

The current process of setting deadlines for implementation of the EU LCP and IED Directives under the Energy Community is an opportunity to take the right decisions regarding the future of energy in South East Europe that is environmentally, economically and socially sound from the point of view of local populations, taxpayers, national economies and the EU as a whole. A study on the need for modernization of LCPs in the Energy Community has been produced for the Energy Community by consultants S.E.E.C. Ltd. from Belgrade. This study must be published in order to allow informed public debate on this issue.

We believe that significant investment in new and additional coal fired power plants is not warranted. The economically and environmentally sound policy would be to reduce air and water pollution from the TPPs as soon as possible, while not incurring excessive costs. In some cases this may mean installing pollution abatement technology on existing units and phasing them out in a decade or two.

Some countries appear to expect Carbon Capture and Storage (CCS) to enable them to continue with burning coal, however so far it is far from being viable on a commercial scale.

The Energy Community Treaty sets the deadline for the full implementation of the LCPD for 31 December 2017 with no time extension for preparing national emission reduction plans. That means that from 1 January 2018 the contracting parties are obliged to ensure that all licenses for the operation of existing plants contain conditions relating to compliance with the emission limit values established for new plants. It is already becoming clear that the contracting parties are not likely to comply with the LCPD by this date and thus will breach the provisions of the ECT. The Commission's proposal intends to give the contracting parties additional transitional time and the possibility of

introducing NERPs and to oblige them to implement the IED in 2018 with regard to new power plants and in 2022 with regard to existing power plants.

Having in mind that the additional time is given for compliance with emission limit values and in order to provide for legal guarantee and to support a coherent approach for the implementation of the EU environment acquis, the Energy Treaty should no longer refer to mechanisms and approaches of the LCPD that will be repealed as from 1st January 2016. Instead certain derogation mechanisms offered by the IED could be used instead. In this respect, the key role will be played by time limited National Emission Reduction Plans, the “Transitional National Plans” (TNP, IED Directive), that the countries may use for certain LCPs from the period of 1st January 2016 – 30 June 2020. The assessment of those submissions is currently under way and a final decision is expected by the beginning of 2014.

It could be therefore envisaged that the TNP may be used *under the same conditions* as for the other Member States that use this system. The end date for submission could be brought to 31 December 2015 (as proposed for the NERP), but the ceiling calculations would have to be set on the basis of the IED mechanism, with a proposed start date of the full LCPD implementation of 31 December 2017. It is crucial that any strengthening of the Energy Community Parties’ obligations regarding the LCPD and the IED are binding, not ‘recommendations’ or ‘guidelines’.

It is paramount that these plans are prepared in a sound and transparent way, involving local, national and EU authorities, International Financial Institutions, civil society in the countries, at the regional and at the EU level. The preparation of the TNPs should be based on the following principles:

- **Transparency and public participation** in the decision making process following the rules of the SEA and EIA Directive,
- **Cross-compliance:** the plans should aim at implementing the BAT based permitting concept of the IED (Emission Limit Values based on the Best Available Techniques Reference Document for Large Combustion Plants, which is currently being updated), while at the same time respecting the EU Environmental Quality Standards such as the Ambient Air Quality Directive at the same time as implementing the LCP and IE Directives, meaning that they should take into account the air management zones and contribute to meeting ambient air quality standards,

- **Equity:** the same rules and same rights should apply across the EU and its future members in order to avoid shifting the external costs of energy generation from more developed parts of Europe to SEE, and the Water Framework Directive (in particular its daughter Directive 2008/105¹⁰ setting EQS for surface waters) should be applied in the Energy Community.
- **Cost benefit analysis** of the investments, involving health costs and other external costs as well as lost opportunities of investing in other possible technological options, especially the rapidly advancing renewable energy sources such as biomass, solar power and wind,
- The timing of the planned investments in modernisation, closure or replacement of power plants should follow the least cost principle, taking into account both **internal and external (environmental) costs.**

50

To secure these, the EU Commission, the bilateral donors and the IFIs should consider supporting swift and timely implementation of the EU Environmental acquis including the preparation of NERPs/TNPs through their project support. Subsidies for fossil fuels should not be made by EU financial institutions.

In order to make sure that negative impacts on human health are reduced as a matter of priority, the Air Quality Directive 2008/50/EC and the Directive 2008/105/EC (as modified by Directive 2013/39/EU) on environmental quality standards in the field of water policy should be included in the Article 3 of the Energy Community Treaty “The Extension of the *Acquis communautaire*”, by means of an amendment of the treaty along with a rigorous implementation of the Industrial Emissions Directive 2010/75/EU.

Governments, EU, bilateral donors, and IFIs should continue and scale up the already successful energy efficiency and renewables promotion programmes in the countries. Achieved and expected results of these programmes should be taken into account in the preparation of the NERPs/TNPs.

¹⁰ Revised by Directive 2013/39/EU of 12 August 2013 as regards priority substances in the field of water policy, OJEU L226/1 of 24 August 2013

