

Analysis of Ukraine’s draft NERP

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1 Introduction

The assessment below covers the hard coal fired Large Combustion Plants (LCP-D) exceeding 300MWth included in the draft NERP submitted by Ukraine at the 36th PHLG meeting in Vienna. The views expressed are solely those of the author and do not – necessarily - reflect the position of the EEB.

Ukraine committed on 1st February 2011, upon becoming a party to the Energy Community Treaty (hereafter EnerCom), to comply by 2018 with certain measures set under the *EU environmental protection acquis*, which includes the Large Combustion Plants Directive 2001/80/EC adopted in the EU on 23 October 2001 (LCP-D)¹.

The LCP-D meant that all operators of combustion plants >50MWth in Ukraine had to implement NO_x, SO_x and Dust controls at the latest by January 2018.

That meant that the government of Ukraine committed in 2011 to apply from 2018 onwards the combustion plant specific ELVs set under the LCP-D, which also includes the 200mg/Nm³ NO_x (requiring secondary abatement for hardcoal) and 400mg/Nm³ for SO₂ with a dust limit of 50mg/Nm³ for the >500MWth category (existing plants).

In the meantime, on the EU level, the minimum binding ELVs have been improved with the Industrial Emissions Directive (IED) and adapted to the 2006 LCP BREF standards, to reflect upper limits achieved with the use of Best Available Techniques (BAT). The minimum binding limits for NO_x/SO_x/dust applicable to existing hardcoal plants >300MWth have been brought to 200/200/20 and the range 100-300MWth tightened to 200/250/25 respectively. The IED will repeal the outdated LCP-D with effect as from 1st January 2016 on the EU level, while in the Energy Community countries the LCP-D limits will apply to existing power plants from January 2018 onwards if the operators of existing plants do not include them in the NERP. The decision to allow NERPs was made by EnerCom's Permanent High Level Group on 23 October 2013 which introduces two derogation systems for existing plants²:

- a) to enable operators to opt out from the LCP-D requirements during the 2018-2024 period provided that the plant does not operate more than 20 000 hours (i.e. limited lifetime/ opt out derogation). If however the plant wishes to operate after that deadline it would have to meet the IED ELVs for “new “plants.³
- b) a NERP derogation system (adapted). The LCP-D ELVs had to be implemented by 2008 at EU level but provided for a tightening of the NO_x ELV to 200mg/NM³ for

1 Directive 2001/80/EC of 23 October 2001 on the limitation of certain pollutants from large combustion plants OJEU of 27.11.2001 L309/1

2 Meaning plants for which the original construction licence or, in absence or such a procedure, the original operation licence was granted before 1 July 1992

3 Art 4 of D2013/05/MC_EnC of 24 October 2014

the pre- 1987 plants >500MWth plants to kick in as from 2016 only. In the meantime, the ELVs have been updated in 2010 through the Industrial Emissions Directive (IED) on the basis of the 2006 LCP BREF upper BAT-AEL values⁴ which will be generally applicable as of 2016. However these plant specific ELVs for existing plants may apply in the EnerCom countries in 2028 only. In general every plant should comply with these individually, however the NERP system allows instead for compliance towards an aggregated ceiling based on calculated historic emissions that allows emission trading provided that the ceilings are not exceeded for the participating plants. It is a mixed NERP (LCP-D) and TNP (IED) system, emerging from the fact that in the Energy Community countries the two directives co-exist in the period between 2018 and 2028. The 2018 ceilings will be calculated on the basis of the pre 1987 plants ELVs set under the LCP-D (pre-1992 plants in the Energy Community). The 2023 ceiling will factor in the tighter NO_x limit of 200mg/Nm³ (requiring secondary abatement such as SNCR/SCR). The 2026 and 2027 ceilings should be based on the IED Annex V, part 1 adapted ELVs. Therefore a linear decrease will occur from 2023-2028. However the plant level IED ELVs will apply only from 2028 onwards.

In the Energy Community, new plants whose permits are granted after 2018 or which enter operation after 1 January 2019 need to comply with IED Annex V part II emission limit values⁵, while for plants for which the original construction licence or, in the absence of such a procedure, the original operation licence was granted on or after 1 July 1992, a proposal is expected to be put forward this year by the European Commission on the deadline for meeting the IED Annex V part I ELVs⁶.

General critique of the NERP system under the EnerCom

As a general rule, LCPs in the Energy Community must comply with the LCPD emissions limit values by 2018. However the NERP system allows significant flexibility which prolongs the threat to public health in the Energy Community countries for significantly longer and to a greater extent compared to the situation in the EU.

The main cost drivers will be triggered through the LCP-D requirements on de-SO_x which should be applicable in as of 2018 (FGD) and the NO_x ELVs (200mg/Nm³) requiring secondary abatement on top of primary measures. The difference in terms of economic

4 See section 4.5 on BAT conclusions for coal and lignite
http://eippcb.jrc.ec.europa.eu/reference/BREF/lcp_bref_0706.pdf

5 Decision D/2013/06/MC-EnC on the implementation of Chapter III, Annex V, and Article 72(3)-(4) of Directive 2010/75/EU (24 Oct 2013)

6 Decision D/2013/05/MC-EnC on the implementation of Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (24 Oct 2013) covers only plants permitted before this date.

impact to comply with the LCP-D is marginally smaller than the IED compliance. For this reason the requirement to comply with the IED ELVs instead of the LCP after the NERP deadline is more bending to the Contracting Parties' failure to implement the LCPD than a “good compromise”. Most emission reductions and economic impact would already be triggered due to LCP-D: PM controls (ESP), de-SO_x (FGD) and primary measures for NO_x controls (low NO_x burners etc) would already be required to cope with the LCP-D ELVs. Further compliance with IED levels would mean an optimisation of abatement equipment already in place, except for the NERP opted in plants a 200Mg/Nm³ ELV on NO_x which would require secondary abatement.

It needs to be highlighted that once the NERP comes to an end, only the IED “existing plants” ELVs would have to be met, which will by then be completely outdated in particular when considering the EnerCom timescales. Some of the EU operators using the Transitional National Plan (TNP) up to mid 2020 according to Article 32 of the IED – which will be used in phase 2 from 2023-2028 under the EnerCom system - will not only have to comply with the Annex V EU safety net ELVs at combustion plant level, but also with the revised BAT conclusions set out below.

BAT has so far not been established as a standard in the Energy Community although many of the Contracting Parties refer to it in their own national legislation and by signing the EnerCom Treaty, the Contracting Parties committed to “endeavour to implement” the IED's predecessor, the IPPC Directive, in accordance with Article 14 of the EnerCom Treaty. The lack of clarity with regard to BAT represents a missing link in comparison with the situation in the EU, as the IED is not only about compliance with the minimum binding ELVs – referred to as the EU safety net - but also about ensuring that industrial activities, including LCPs, operate in accordance with emission levels associated with the use of BAT. This is quite evident from the merging of the IPPC-Directive (Chapter II of the IED in particular) with the updated LCP-D (Chapter III and V of the IED in particular).

Article 73 of the IED states that “Chapter III and Annex V of this Directive shall be considered to represent the Union-wide minimum requirements in the case of large combustion plants.”

The upper ranges of the emission ranges associated with BAT (BAT-AEL) from the 2006 BAT BREF have been integrated in the IED Annex V EU Safety Net ELVs. These levels correspond to the Annex V ELVs but the IED's use of BAT goes further since it sets an emission range associated with BAT which should not be exceeded by the permit writer.

Only Chapter III, Annex V and Articles 72 (3)-(4) of the IED are so far obligatory for new plants under the EnerCom *acquis communautaire*. It remains to be seen whether a

recommendation by the Energy Community High Level Reflection Group⁷ to adopt Chapter II of the IED and thus BAT-based permitting will be adopted by the Energy Community. In any case it would be very unwise not to take BAT into account when making investment decisions in EnerCom countries, given the long time-span of energy-related investments.

All this means that compared to the situation in the EU, the Energy Community Treaty already allows Contracting Parties to undertake fewer and later obligations to diminish large combustion plants' impacts on public health. The NERP system allows an even longer extension of this process. It is therefore imperative that public health is not threatened even further by allowing large numbers of plants to be included in the NERPs or by allowing longer deadlines than are absolutely necessary.

2 Procedural considerations

The NERP referred to in this analysis should be considered as falling within the definitions of “plans and programmes” pursuant to Article 2(5) of the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context to which the Ukraine is party⁸.

The NERP is drawn up and implemented by a Contracting Party in accordance to an implementing decision which confers binding provisions on the operators subject to it. The plan has to be communicated by the Contracting Party (Ukraine) to the Secretariat of the EnerCom which shall evaluate it. Finally the plan is adopted by the Secretariat and the Contracting Parties through an active approval procedure in accordance with Decision D/2013/05/MC-EnC.

Further, the NERP is to be considered as a plan / programme relating to the environment pursuant to Article 7 of the Aarhus Convention to which the Ukraine is Contracting Party⁹.

The NERP is therefore to be considered as a “plan relating to the environment” and the validity of the approval procedure should be assessed as well against the relevant provisions of the Aarhus Convention that apply on public participation.

The Compliance Committee under the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus

7 https://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/HLRG

8 Ratified 20 July 1999

9 Ratified on 18 November 1999

Convention), -hereafter “ACCC”- has found in a case¹⁰ that “*under the circumstances considered in this case, there was a considerable span of time for the participation of the private stakeholders compared to that granted to other members of the public to the extent that the authority exercised its discretion in a way that ran counter to the objectives of the Convention, in particular “to encourage widespread public awareness of, and participation in, decisions affecting the environment and sustainable development” by involving, among others, NGOs promoting environmental protection. While the closer inclusion of the private stakeholders in the process may have been justified, there was still an obligation on the public authority to keep with the objectives of the Convention and not to abuse this provision to effectively bar or significantly reduce effective public participation of other members of the public.*”¹¹

Further the ACCC finds that “[...] the Party concerned has the obligation to demonstrate that it has fulfilled its obligations under article 6, paragraph 8. The Committee notes that in the process of preparing a plan this obligation could be fulfilled by following the procedure set out in article 6, paragraph 9, or any other way the Party concerns chooses to demonstrate that it has taken “due account” of the outcome of the public participation. “.

It would be important to assess on whether the Ukraine has fulfilled the relevant provisions on public participation laid upon them through the Aarhus Convention. It should be noted that the European Commission has a unique role in the entire substantive framework of the EnerCom since it acts as a coordinator of all the implementation by the Contracting Parties of the *acquis communautaire* (as per Article 4 of the EnerCom). In doing so the European Commission is bound to the EU Aarhus Regulation, in particular Article 9 stating that the “*Community institutions and bodies shall provide, through appropriate practical and/or other provisions, early and effective opportunities for the public to participate during the preparation, modification or review of plans or programmes relating to the environment when all options are still open.*” (own emphasis added).

Article 9(4) of the Aarhus Regulation provides that “*a time limit of at least eight weeks shall be set for receiving comments.*” Further, where meetings or hearings are organised, “*prior notice of at least four weeks shall be given.*” It is not clear whether these obligations are met, which –if not- would put the NERP acceptance procedure under risk of legal challenges through procedural grounds.

10 See paragraph 59, [ACCC/C/2012/70](#) Findings and recommendations with regard to communication ACCC/C/2012/70 concerning compliance by the Czech Republic. Concerning public participation in multi-level government structure involving European Commission and Member States relating to assessment of plan relating to the environment pursuant to EU legislation

11 Ibid paragraph 62

3 Draft NERP by Ukraine: an economic non-sense and environmental threat

The Ukrainian government needs to take a strategically important decision with important consequences for the energy supply landscape and forward looking investments related to its outdated coal fleet. The external damage costs from these coal LCPs are huge - estimated at 9.1 billion EUR in 2014 - which are linked to emission ranges one could qualify as criminal.

Notifications need to be made prior to 31 December 2015 and it is an “either or decision”: either LCP-D compliance by 2018, or LLD or NERP system or shut down.

Fig. 1: Comparison of current emission levels with EU requirements for >1000MWth hardcoal LCPs

Parameter	Current Levels	National Order N°309	IED ELVs	LCP revised draft* BREF	NGO (EEB) BAT levels (based on data of commercially operating LCPs)
SOx	3000-5000 mg/Nm ³	500	200 (monthly)	20-180 (yearly)	<10-40 (yearly)
NOx	510-1872	500	200 (monthly)	65-150 (yearly) 80-200 (daily)	65-80mg/Nm ³ (yearly) <100mg (daily)
Dust	842-3960 mg/Nm ³	50	20 mg/Nm ³	2-10 (yearly) 2-16 (daily)	<1-3 (yearly) <5 (daily)
Hg	?	?	N/A	<1-4µg/Nm ³ (annual)	1.2.1.5.µg/Nm ³ (annual)
Energy Efficiency			N/A	33-45% net efficiency, lower range in case of unfavourable conditions CHP mode 75-97% (New 45-46%)	>43% CHP mode >87%

*To be finalised this year, final TWG meeting in June 2015

The hardcoal plants >300MWth still operational in Ukraine are completely outdated plants not living up to BAT standards in any manner. The standard commercial design life for a hardcoal LCP in this size range is 40-45 years, yet the average year of first operation date of the Ukrainian LCPs dates back to 1967, meaning that all (except 1) exceeded their commercial design life. In 2015 the average age is 48 years:

- all individual combustion plants (109) except #Starobeshivska Unit 4 would be operating in 2028 way beyond their design life (economic life);
- all individual combustion plants (109) except #Starobeshivska Unit 4 would be operating well beyond their metal age limit;
- only #1 Zuvivska TPP (unit 1-4) (46 years) and #Starobeshivska Unit 4 (19 years) may be considered for rehabilitation/modernisation, in line with the updated BAT standards.

The NERP system is in essence a delay strategy for retrofitting/rehabilitation of existing plants to meet updated pollutants levels whilst allowing profit making through a trading scheme for the operators of the participating plants. This means in most cases that the operator plans to invest for retrofits in order to run the plant much longer (return on investment). Considering that the EnerCom NERP would only start by 2018 and end in 2028, those plants would be on average 61 years old, which is nonsense from an economic point of view, also from a technical point of view it would be very challenging – perhaps not feasible at all - to meet those levels. From a practical viewpoint all the hardware (boilers, turbines, exhaust flue gas configuration etc) would have to be replaced and they would thus be considered as “new” installations.

The “investment case” is very unfavourable: the coal units run at very low load factors (36.8%) being used to cover peak load demand and capacity use (3,224 h/year consultancy study / 5,460 h/ year in the draft NERP). With low electricity prices the investment case is particularly weak which is exacerbated by high risk of outages due to worn out hardware.

No party is obliged to use derogations from the obligations to implement the *acquis communautaire*. It is indeed highly questionable that the use of derogations would meet the objective of the Treaty to “*improve the environmental situation in relation to Network Energy, Energy Efficiency, to foster the use of renewable energy and to create a “single regulatory space”*” as per Article 2(1) d) of the EnerCom Treaty.

Further the Treaty requires in Article 5 when following the *acquis communautaire*, “*a high level of investment security and optimal investments*” should be ensured. There are strong arguments – technical and economic - which indicate that listing those hard coal fired LCPs in the draft NERP would not meet these objectives.

Finally, operators of hard coal LCPs are seeing NERP as an opportunity to evade tight emission limit values in the long term for existing plants, which can distort competition

and hinder restructuring and de-monopolization of energy sector in Ukraine. NERP as a formal compliance option is especially favored by DTEK (a private company owned by oligarch Rinat Akhmetov, which controls 76% of thermal generation capacities and provides 27% of total electricity production in Ukraine).¹²

On top of that, the government of Ukraine intends to delay the NOx ELVs even further by additional 6 years (2034 instead of 2028) and aims to cheat on the deadline for the dust and SOx levels as well by adding another year (2029 instead of 2028). That would in essence mean that plants which by 2034 would be in average more than 67 years old, would start operating in “rehab mode” and at least probably another 20 extra years in order to recover the return on investment. We are not aware of any plant in this world of this age being able to cope with this.

The “security of supply” argument needs to be critically assessed. In fact 2012 data¹³ indicated that winter peak power demand culminated at 28 GW (17-19h). Of the total 29,4 GW installed capacity of TPPs listed as functional in 2012, around 5 GW was used in baseload mode while 6 GW was used to cover peak load demand.¹⁴ This suggests that Ukraine has a surplus of 18,4 GW of thermal electric capacity, which is not required to meet current domestic demand, which has significantly declined since 2012. Considering the economic recession and the potential for energy efficiency improvements, and demand-side measures, Ukraine’s power demand will not exceed 28 GW in foreseeable future, so a maximum of 11 GW of thermal generation capacity may be required, meaning there is currently a huge surplus of 18,4 GW obsolete TPP installed capacity.

2012 and 2013 data indicated that Ukraine had in balance a surplus of total electricity production of 9660 GWh/year and 9809 GWh/year¹⁵ respectively.

The current coal fleet is not adapted to meet peak demands and low load factors are contributing to higher operational costs and increased pollution. Meanwhile out of 29,4 GW installed thermal capacity, 5,4 GW of gas fired units, which are originally designed to cover peak loads are not used. These 8 gas-fired units at Vuhlehrska, Zaporozhska and Tripilska TPP are not included in the NERP implementation list, while these units have significant operational reserve and they can be used as peak load units up to 2040. If these units are put back on-line they can replace those coal units, which were used to cover peak loads.

12 <http://www.pravda.com.ua/cdn/cd1/2015year/akhmetov/index.html>

13 http://2014.ukrenergo.energy.gov.ua/ukrenergo/control/uk/publish/printable_article?art_id=117501

14 <http://eircenter.com/ua-analiitika/svyazannyie-odnoj-setyu-o-prirode-energosisitemyi-i-veerniyx-otklyucheniyax/>

15 https://www.energy-community.org/portal/page/portal/ENC_HOME/MEMBERS/PARTIES/UKRAINE,
Electricity Fact and Figures Image

Based on the data available and wider considerations the **NERP/TNP option is to be strongly rejected for any of the hard coal plants which are still operational.** Opting for the NERP/TNP system would mean that the operators of the existing plants make investments to keep these plants operational even beyond 2028. This would be clearly “wasted assets” that could be rather spent on forward looking solutions within a wider sustainable energy policy reform.

The huge amount of investment needed for keeping certain LCPs longer alive beyond 2018 should rather be spent for sustainable solutions that will be beneficial first for the Ukrainian citizens, such as energy efficiency improvements in industry and the residential sector. If that was tackled, that would mean that more than 50% of outdated coal LCPs plants could be shut down by 2020.

The estimated achievable energy savings for Ukraine in 2011 amounted to 26.5 million toe, which corresponds to approximately 29.3 billion cubic meters of natural gas.¹⁶ This is more than Ukraine imported from Russia in 2013. Hence there are opportunities for major energy efficiency increase both in industry and households, which could reduce overall electricity demand and save enough natural gas to run gas-fired units for peak load coverage.

The LLD option may be considered for coal fired units as a less harmful derogation alternative on a case by case basis.

4 Specific flaws needing to be addressed

4.1 Inconsistencies (entries)

Reference plant #34a Starobeshivska TPP (power unit 4) is reported as a plant that has been put in operation for the first time in 2009. It is therefore considered as a “new plant” pursuant to Article 1(9) of the implementing decision and shall therefore be removed from the draft NERP since it is not eligible.

4.2 Inconsistencies ceilings

The aggregated 2018 pollutants ceilings for Dust and SO₂ are set by 10% higher and 15% higher for NO_x compared to the baseline scenario, which is not acceptable pursuant to the obligation provided under Article 4(3) of the LCP-D to achieve “significant emission reductions”, even though the NERP system.

¹⁶ Ukrainian energy index http://www.energy-index.com.ua/media/report/pdf/_UEI_13_ENG.pdf

It is also not clear on whether start up and shut down periods have been included in the baseline scenario calculations.

4.2.1 SO₂:

The aggregated 2018 pollutants ceilings for SO₂ are set by about 10% higher than the current emission levels reported in part 2, which is unacceptable.

For the following 20 reference (multiple) plants entries, the 2018 SO₂ entry ceilings are exceeding by far compared to the latest reference baseline emission data of 2014, indicated in the SEEC consultancy study:

#7,#9,#10,#11,#12,#13,#14,#15,#16,#17,#18,#23,#24,#26,#27,#28,#30,#31,#40,#41.

For the following 9 reference (multiple) plants entries, the 2018 SO₂ entry ceilings are not possible to be checked, either because no data is available of emissions volumes are reported as "0". These entries should be checked for accuracy:

#20,#21,#34b,#35,#36,#37,#75,#89,#94.

All the liquid fuels fired entries should be checked on whether the entry ceilings are set in according to the required maximum sulphur in fuel obligation, meaning no higher SO₂ ELVs than 1700mg/Nm³.

4.2.2 NO_x:

The aggregated 2018 pollutants ceilings for NO_x are set by about 10% higher than the current emission levels reported in part 2, which is unacceptable.

For the following 4 reference (multiple) plants entries, the 2018 NO_x entry ceilings are exceeding by far compared to the latest reference baseline emission data of 2014, indicated in the SEEC consultancy study: #12,#13,#50,#55.

For the following 9 reference (multiple) plants entries, the 2018 NO_x entry ceilings are not possible to be checked, either because no data is available of emissions volumes are reported as "0". These entries should be checked for accuracy:

#21,#33,#34b,#35,#36,#37,#75,#89,#94.

The 2023 NO_x ceiling will be calculated on the basis of the updated NO_x ELV of 200mg/Nm³ instead of the 500mg/Nm³, for the >500MWth category (factor 2.5 reduction). It is therefore incoherent that the proposed 2023 or 2024 ceilings are not drastically decreased. Instead a stable annual decrease of -11,662 tonnes of NO_x is proposed from 2021-2026, as if this important reduction obligation is not factored in at all.

4.2.3 Dust:

The aggregated 2018 pollutants ceilings for dust are set by about 10% higher than the current emission levels reported in part 2, which is unacceptable.

For the following 6 reference (multiple) plants entries, the 2018 dust entry ceilings are exceeding the latest reference baseline emission data of 2014, indicated in the SEEC consultancy study: #9,#10,#12,#17,#40,#41.

For the following 9 reference (multiple) plants entries, the 2018 dust entry ceilings are not possible to be checked, either because no data is available or emissions volumes are reported as "0". These entries should be checked for accuracy: #20,#21,#34b,#35,#36,#37,#75,#89,#94.

4.3 Flaws linked to the compliance measures proposed

The draft NERP provided highly questionable information on whether the compliance measures (abatement techniques) needed for the emission reduction potential will be put in place on time, if at all. Irrespective of the fact that any investment in these plants would be a wasted asset, it is indicated that the Cabinet of Ministers would have to develop and approve a financial mechanism to provide the necessary investments.

It is quite unlikely that foreign investors would take risks in investing in a region considered as "most corrupt in Europe"¹⁷ and indirectly support an infamous oligarch, Rinat Akhmetov, who owns the high numbers of LCPs in the NERP of his company DTEK, a private monopoly. In 13 March 2015 DTEK posted a full-year net loss of 19 bn hryvnia (US\$833m) after a net profit of 3bn hryvnia (US\$161m) in the previous year. This year, DTEK faces payments on a record amount of its debt: up to \$950m, including \$200m for Eurobonds that matured on 28 April.¹⁸

Other general flaws relate to the timescales indicated in Annex III for the planned emission reduction measures: due to the significant change in NO_x ELVs as from 2018 (the ceilings would have to be based on the 200mg/Nm³ ELV instead of the 500mg/Nm³) significant emission reductions would have to be delivered in 2022/2023. Given the current emission levels this would require primary measures in this timescale and at the latest 2025 secondary measures on certain units (due to a linear decrease and at least 6 months lead time for installment of the catalysts).

Yet the draft NERP only indicates SCR/SNCR (Selective non-catalytic reduction) would be installed after 2023, in most cases not prior to 2026/2027 and even 2028 and after in certain cases (e.g. #1, #2,#4; #7,#10-13, #17, #19, #20-22, #23,#24, #29-30, #31, #32). This means a breach of the NO_x 200mg/Nm³ ELV is very likely.

¹⁷ <http://www.kyivpost.com/content/ukraine/transparency-international-slams-ukraine-as-most-corrupt-in-europe-332965.html>

¹⁸ <http://endcoal.org/ukraines-coal-industry-hits-a-wall-but-who-will-pay-for-the-fallout/>

Further SNCR is not considered as BAT for any hardcoal fired plants >300MWth because it does not deliver the required NOx abatement efficiency compared to SCR.¹⁹ Often SNCR is listed as the option considered.

With regards to dust, fabric filters should be required to be installed since they can deliver better capture of heavy metals (e.g. mercury) and keep dust levels down at levels below <5mg/Nm³ (if well maintained). The ESP is less effective.

In regards to SO₂, the wetFGD should be required as the technique to be used since it is more effective. DSI could be considered for the small plants only <300MWth (aggregated).

Finally, the draft NERP does not provide indications on whether a legal framework with effective and dissuasive penalties is in place to ensure compliance.

4.4 Other flaws identified

4.4.1 Flue gas volumes calculations

We prefer that the theoretical stoichiometric flue gas volumes of the European Environmental Agency (EEA) to be used, instead of the VGB figures. The values are indicated in Annex D of the Technical Report 2008/4, a report which gives also good insights into the subject matter²⁰

Fuel	Theoretical flue gas volumes m ³ /GJ	Reference oxygen content
Hardcoal	337.1	6%
Lignite	360.6	6%
Liquid fuel (oil)	321.7	3%
Gaseous fuels	299.9	3%

The ceilings shall be recalculated on this basis.

4.4.2 Data gaps on monitoring and compliance assessment

The draft NERP application contains a further derogation stating that *“Should the combustion plant which uses low sulphur content fuel and is not equipped with desulphurization unit **switch exceptionally to other fuel for a limited period of time to sustain energy security when its regular fuel is not available, sulphur dioxide***

¹⁹ See LCP BREF

²⁰ EEA technical Report 4/2008 Air pollution from electricity-generating large combustion plants An assessment of the theoretical emission reduction of SO₂ and NO_x through implementation of BAT as set in the BREFs http://acm.eionet.europa.eu/reports/eea_tech_rep_4_2008_AP_from_electricity_LCPs

emissions for that period are not included in its annual report on emissions.” This derogation is not available in the NERP ENERCOM system and is to be removed.

Article 6 of the Implementation decision also requires “**emission projections for scenarios taking into account ongoing investments for which financing is secured and a well-defined implementation timeline is drawn up**”, to show progress in implementation. This deliverable is not mentioned in the latest draft and should be added.

The implementation report should also contain plant by plant fuel and emissions data as well as the total annual amount of energy input, related to the net calorific value, broken down in the five fuel categories. This reporting gap should be remediated.

The draft NERP should be explicit on the requirement to oblige operators to install continuous monitoring at the latest by 2018 on the parameters NO_x, SO₂, dust and CO for gas fired units >100MWth. CEMs should also be required for Mercury measurement, in line with BAT in this field.

5 Undermining of national law – Orders of the Ministry of the Environment and Natural Resources No 309 and No 541

The graph below²¹ shows that the Ukrainian Ministry of Energy and the coal industry were prepared to enforce the LCP-D ELVs which were to be applied from January 2018 at the time Ukraine joined the Energy Community, before the 2013 Decision by the Ministerial Council was made. This is demonstrated by the existence of the Order of the Ministry for Environment No 309 on restrictions for release of air pollutants from stationary sources (adopted in 2006), and Order No 541 on emission limit values for large combustion plants (adopted in 2008). These provisions are still in force currently.

²¹ Dusting off Ukraine's energy sector ; CEE Bankwatch Network, <http://bankwatch.org/sites/default/files/dusting-off-Ukraine-energy.pdf>, September 2014

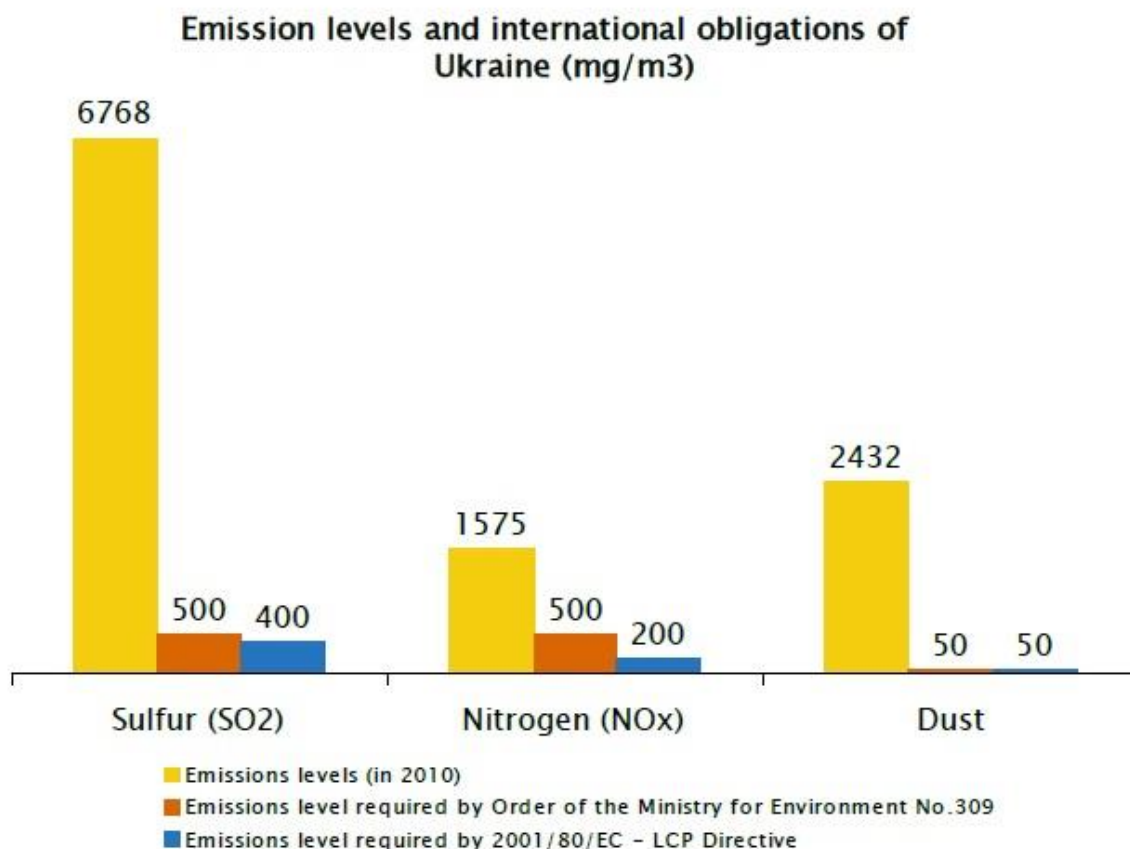


Fig 2. See footnote 7

6 Conclusions

Due to the old age and poor technical condition of most of the plants, the most cost effective option would be to reject the NERP in its entirety and in any case exclude any hard coal fired LCP from the list. Ukraine has massive overcapacity and many of the plants are in any case not needed for energy security. This would be the scenario in accordance to commitments taken in 2011 and in accordance to the national law the industry has been prepared for.

As an alternative to the LLD/NERP, the peak load 1500 hours derogation may be considered on a case by case, which would enable some relaxation on the NO_x limits (600mg/Nm³) and SO_x limits (800mg/NM³). This may be considered for plants that underwent rehabilitation where e.g. PM controls could be optimised. In general hardcoal plants should not be used for meeting peak load demand since high emissions are

associated with Start Up and Shut Down operations, however it is a reality in the Ukrainian hard coal TPPs.

At last resort, certain existing plants, that are necessary for the stabilisation of the grid and that could not otherwise be shut due to an overriding need for energy supply for district heating (provided that no alternative source capacities or demand side management can be put in place on time), could use the 20.000 hours opt out derogation and should close at the latest by 2024. This would in terms of capacities mean business as usual considering the low capacity use of the coal LCPs.

Starobeshivska Unit 4 is considered as a “new” plant and therefore not eligible for any derogation. However due to the extreme emission levels, some cost-effective conservative measures should still be required i.e. PM controls, Low S coals in particular for public health reasons.

7 Recommendations

Considering the major surplus of generation capacity combined with the exceeded retirement age of all coal fired LCPs (except #34 a Starobeshivska TPP (power unit 4)) and all the major substantive errors identified, **the draft NERP submitted by Ukraine should be firmly rejected.**

The huge (at least 6 billion €) investments required to make the power plants IED compliant would constitute wasted investments compared to other options that would bring much more benefits to the Ukrainian citizens in the long term, such as demand side management (boosting energy efficiency) or alternative supply side investments such as renewable or decentralised small scale CHP units (biomass or gas fired) or even grid upgrades which are the better environmental alternative on the long term.

Fig. 3 Cost figures (in million €) for upgrading (all NERP entries) are given as follows:

Pollutant	2013 study	Draft NERP	Comment
NOx	2,300.9 (1,871.2 LCP-D)	6500 40 (coal CHP)	
Dust	811.7 (709.5 LCP-D)	300€/kwh	Draft NERP refers to 50mg/Nm3 whilst the max ELV is 20 / BREF levels 10
SOx	2,920.6 (2,557.9 LCP-D)	40 (coal CHP)	
Total (LCP D)	5,138.5	>23.500?	The figure presented in the NERP includes the cost of building new coal power plants, which would replace the opted-out ones
Total (IED)	6,033	>23.500?	

The gas fired CHP generation capacities could be earmarked for rehabilitation / upgrading. Even if the major flaws would be corrected, serious doubts will remain on whether the retrofits will materialise due to lack of investments and technical challenges.

Since any decision on available options at hand would have considerable implications for the future Energy policy of the Ukraine, an effective and timely public participation procedure needs to be guaranteed.

According to the National Institute of Strategic Studies, 45.7GW of renewable energy capacity can be installed by 2030. According to a country assessment by Change Partnership²², the plan is to build 3-4 GW of wind capacity, 1.5-2.5 GW of solar capacity and about 0.8GW hydro (in total around 7GW). The energy efficiency (EE) potential is also huge. The investment needs for scaling up RES and EE are estimated at about 34 billion €.

As stated previously, at least 6 billion (according to the SEE Consultancy study) to 23.5 billion € (draft NERP, government estimate, which includes the cost of new built plants to replace opted-out ones) would be required to upgrade the outdated generation fleet, which would eat up 18%-69% of resources needed to keep polluting generation capacity. Even if the IED compliance could bring an external cost reduction of 115 billion € over 12 years²³ compared to the baseline, continued operation of hard coal plants brings significant external damage costs and is unsustainable in any case (even if BAT is implemented). An annual carbon price evaluated to 100 million € should also be factored in.

Whatever the decisions to be taken, these need to be guided by common sense in the best public interest for the Ukrainian citizens and the Energy Community as a whole. Accepting the NERP draft as presented definitely does not fall in that category of choices to be considered.

Christian Schaible,
Spiegelberg 26/04/2015
For CEE Bankwatch Network

22 Change Partnership, Climate Change : time for the energy community to take action, February 2015
<http://bankwatch.org/publications/climate-change-time-energy-community-take-action>

23 SEE Consultancy report, <https://www.energy-community.org/pls/portal/docs/2652179.PDF>, page 75