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**POSITION PAPER**  
**to the draft of updated Energy Strategy of Ukraine until 2030**  
**Working Group: "SUSTAINABLE DEVELOPMENT: ENERGY EFFICIENCY AND RENEWABLE ENERGY"**

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### **Introduction**

**Sustainable Development (SD):** *development that meets the needs of the present without compromising the ability of future generations to meet their own needs*<sup>1</sup>.

The introduction of the Draft Strategy claims that the document will focus on Sustainable Development: *"The energy sector shall switch from the policy of energy supply for extensive development of the Ukrainian economy to energy supply for sustainable economic development"*. One would therefore expect to find, throughout the document, the strategic outlook to meet energy demand through economically feasible investments, strategic diversification principles and respect for the environment. The expectation would thus be lowering of the share of energy produced from Nuclear Power and from polluting sources such as Coal and Lignite, and their replacement with more Natural Gas and Renewable Sources, while giving an overall priority to Energy Efficiency programs to reduce intensity and overall energy demand. Although Renewable energy Sources (RES) and Energy Efficiency (EE) seem to be among the relevant strategic issues of this Strategy (*"EE and energy saving is one of the underlying reasons for the strategy review"* – p.4) the outcomes are far from this statement.

Overall the document presents many incongruities, mostly found in the tables from p. 9 to p.22, where conversion factors are not specified and very often do not make sense: numbers do not add up correctly (not only for a lack of decimal numbers) and the data found in the following chapters do not match the numbers presented in the tables.

Moreover, there are no clear sources of where the initial data (i.e. consolidated 2010 data) has been taken from and therefore no possibilities to make crosschecks and/or comparisons.

**Energy Efficiency** seems to be an important priority on which the review of the 2006 Strategy was based: on p.5 we read that *"Based on the (listed) objectives, the key tasks and directions of the Ukrainian Energy Strategy implementation involve, among others, Designing drivers for a radical reduction of the energy*

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<sup>1</sup> United Nations, the Brundtland Report, 1987

content in domestic products, [...] and the design of the market-based incentives to encourage energy efficiency and energy saving.” However no best practice seems to be taken into account, no programme is described or detailed with concrete means to reach targets, no real national behavioural change is undertaken and only a marginal improvement in transportation is considered. On p.6 we read that “Implementation of the Energy Strategy provisions shall ensure the achievement of (among others) Implementation of the comprehensive energy efficiency programmes aimed at cutting specific energy consumption in the national economy by 30-35% until 2030”. However no application of such programmes can be found in the projections.

Given its notorious levels of intensity, Ukraine should make EE its most important priority and highlight it in the new reviewed Strategy.

If we take a closer look at the contents of the draft Strategy, it is clear that there are two major priorities that overshadow all others: (i) to cut down imports and boost internal production of energy (in order to demonstrate Ukraine’s intention to become more energy-independent and to increase security), and (ii) to further develop fossil fuels (2010-2030: +82%) and Nuclear production (2010-2030: +49%).

It is surprising to find on p.27 a list of a number of priorities stating that “Given the current state in this sector, under any scenario of the energy demand growth the energy sector of Ukraine has the following priorities in order to assure the growth of the country economy”. Among such priorities we find “**develop renewable sources**”. From the available data in the tables (p.9-22), the highest share of RES is in the Worst Case Scenario and amounts to 1,88% of Total Supply (239 Mln TCE) in 2030. The lack of prioritization of RES is further underlined on P.50: “As the prices of the primary energy sources go up and in view of the large-scale upgrade of the basic equipment of the power sector, the renewable technologies as solar panels, household and industrial wastes and bio fuels will find wider applications”.

To give a comparative example, when analyzing the energy strategy of EU (including Croatia, Iceland, Norway, Switzerland and Turkey) we find the following<sup>2</sup>:

- 61% of power generation investments for the 2012-2025 period will be directed to RES (+/-EUR 600 billion over the period).
- 36% objective of installed capacity covered by RES by 2025 in EU compared to 16% in 2011.
- Coal installed capacity will drop from 21% to 12% and Nuclear from 14% to 9%, respectively for the period 2011-2025.
- EU power generation mix by 2025: RES 25%; Large Hydro 14%; Nuclear 20%; Gas-Oil 23%; Coal 17%.

Finally **Environment** and Environmental costs and Green House Gas (GHG) emissions are not taken into consideration nor discussed as they should be. While countries with nuclear power plants (NPPs) around the world are looking for ways to decommission NPPs or to reduce the production of energy from fossil fuels, Ukraine appears to be planning the opposite. The environmental impact, in addition to having high economic and health-related costs, is a major concern which needs to be addressed globally. Ukraine should not be an exception.

### **POSITION 1 - Energy Efficiency (EE) should be given higher priority in the Strategy**

- Energy efficiency should be the first and foremost chapter of the strategy. Ukraine should have an overall assessment of the Demand growth over the 2010-2030 period with a “business as

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<sup>2</sup> IHS – Emerging Energy Markets – “Renewable Power Europe, Market Forecasts: 2012-2025” – May 2012

usual” trend, and then provide the ways in which to lower demand through detailed EE programmes, which would then allow the assessment of the supply to cover demand, and not the other way around as it appears to be practiced throughout the new draft Strategy.

- Chapter 4, p.112, gives an overview of the Energy Intensity situation of Ukraine while describing the objectives that should be reached. Although there is a clear statement of the targets (-43% in GDP electric power intensity reduction, and -68% GDP gas intensity reduction) there are no mid-term objectives, which was one of the initial problems with the 2006 strategy. Moreover the draft states that the potential savings can be reached through “structural and technical factors” without making any realistic investment assessment.
- The targets for energy savings by population are questionably low and suggest that the government plans to continue subsidies to the population rather than increase tariffs to fully recover costs and fully fund the district heating systems to provide adequate maintenance and replacement of outdated and energy inefficient equipment. Continued “below cost” tariffs will require government subsidies and will not send economic signals to the population to employ energy efficiency measures.
- On p.114 the statement that there is a necessity to “develop a complex program of EE improvements that include a description of specific measures to achieve the goals set in the Energy Strategy and the plan of initiatives implementation, with indication of the periods and those in charge of their fulfilment” is correct. This goal, however, might have to be defined with more detail and formally undertaken by the relevant responsible authority.
- P.114 gives a list of efforts which needs to be undertaken to reach certain objectives of electric energy production and consumption reduction. These efforts appear to be fairly superficial and lack detail. We would expect to see more of specifically what will be undertaken. For example: *hardening of the EE standards in construction and transportation*; how will the government stimulate the modernization of the outdated sources of production; how will they stimulate the use of energy-saving households devices; etc.
- Grid losses reduction is not clear: the value remains constant at 22-23 TWh/year (p.16) but it’s not clear how this has been calculated. The impression is that new developments are highly efficient, while old infrastructure keeps the same rate of losses. Moreover, on p.26, paragraph 2, the losses are said to decrease from 13% to 9% while the table on p.24 and on p.16 show a decrease from 11.5% in 2010 to 8.2% in 2030
- Energy Efficiency, rather than a concrete science with objectives to be reached and a clear path to reaching them, appears to be considered as a non-reality and is thus not entirely considered within the draft Strategy. In conclusion, we believe that EE has not been prioritized as it should have been.

## **POSITION 2 - Increasing Renewable Energy Sources (RES) share in the Energy Mix of Ukraine is required for sustainable development and country’s energy security**

### **2.1 RES Share in the Fuel and Energy Resources Balance Forecast**

- Although the total share of RES related to NEW capacity production is approximately 13% by 2030, the overall share of RES (“wind, solar, small hydro” – Ref. Scenario, p.9) only reaches a mere 2% production share (13 TWh compared to a total production of 646 TWh or 224 Mln TCE).
- Compared to its neighbouring EU markets, striving to develop more RES, with an expected installed capacity of 36% by 2025, Ukraine is certainly falling behind in terms of sustainable development and prioritisation of environment-friendly sources of production, while failing to reduce Coal and Nuclear installed capacity (EU projects a reduction of 43% and 36% respectively).

- While it is not meant to criticise the larger share of fossil fuel energy production (although it would be preferable to see more Natural Gas development rather than the more polluting Coal production), the RE market players have reached a common understanding that the share of RES, which would be a strategic internal source of energy supply, should grow to between 10-15% of the share of production or generation by 2030.

## 2.2 RES Share in the Electric Power Balance

- The Power Balance of Ukraine to 2030 follows the same trend: Power Generation from Coal and Nuclear power plants cover an estimated 80% share in 2030, with a CAGR (Compound Annual Growth Rate) of 35% and 49% respectively, between 2010 and 2030.
  - RES power production, estimated at 13 TWh, is responsible for only 4.61% of total power production. Notwithstanding the importance and relevance of guaranteed sources of supply, which ought to cover the highest share of the power generation mix, we think that a more relevant role should be given to RES, as they represent a solid strategic development and would otherwise remain an unexploited potential for Ukraine.
  - The above is far from in line with the initial statement made on p.27, where it is written that “one of the strategy’s priorities is to develop RES in order to assure the growth of the country’s economy”.
  - Our proposal, as for the overall Energy Balance, is to project a 10-15% share of RES in the electric power balance, which seems reasonable, achievable and strategically viable.
- Generating mainly conventional energy excludes fluctuations in the grid. However, integrating RES into the grid requires the so called “flexibility” of the grid that is very hard to achieve in case of even 20% of overall grid capacity. Moreover, p.41 states that “to enhance the competitiveness and transparency of the electric energy retail market there is the need to implement the reforms aimed at (among others) ensuring the transparent and non-discriminatory access to the electric networks”. Again, this statement, so as others, appears to be in disagreement with the plans presented.

## 2.3 RES Development

- The draft Strategy states on P.51: “Development of RES is important for: reducing fossil fuels consumption; improving the environment; development of Ukrainian industry [...]” However “energy generation from RES is said to be considerably higher compared to the costs of the conventional generation”. But has the overall cost – in the Long Term – really been assessed?
  - Today Ukraine has the possibility to start a new development era and address environmental issues that avoid potential catastrophes, without having to make the same mistakes that its neighbouring EU countries have made and are still paying for (i.e. decommissioning of NPPs, replacement of Coal fired plants, etc) in order to address environmental issues and avoid potential catastrophes.
  - From P.51: “by 2030 the target indicator of the total capacity of the alternative and RES generation shall be 10% [...]”. Indeed if the installed capacity will be 5-7 GW a  $\pm 10\%$  share of overall installed capacity will be reached, but from the tables (p.9-22) we clearly see that production from RES remains superficial and close to futile, with a generation share of 4.6%.
  - An Environmental Impact Assessment for all Sources shall also be made in an attempt to more accurately understand the real costs attached to the strategic development projected in the draft Strategy and perhaps show that a more RES and Environmental approach is necessary.

- Paragraph 3.3.3 (page 41) of the Draft Strategy indicates that “the implementation of the new market model will require the elaboration of the technical details, like, for example, compensation for the «green tariff» [...]”. Given that Article 17-1 of the Ukraine Law on Electrical Energy, under which the State warrants the purchase of the whole volume of electricity produced from RES and not sold directly to customers or energy supply companies, under the established «green tariff», we consider the term “compensation” to be incorrect and inappropriate and would like to propose to replace the above quoted “compensation for the green tariff” with the more appropriate “mechanisms of purchase of the whole volume of electricity under “green tariff”.
- Moreover, the market model should aim at liberalization and increased cooperation with neighbouring markets with price set on a free market.
- As a member of the **European Energy Community**, Ukraine has to implement the energy chapter of the EU aquis communautaire, including DIRECTIVE 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market, setting a 12% target for increase of the share of energy derived from renewable sources until 2020. At the same time, this document has been amended by Directive 2009/28/EC, based on which European countries have even increased this target up to 20% by 2020.
- In general, reference to an exhaustive list of EU Directives related to energy efficiency is made throughout the relevant chapters. However, it is not clear how Ukraine is planning to harmonize its legislation/regulation with these Directives in order to meet Energy Community requirements.
- The draft Strategy attaches great importance to **nuclear** energy development. While a lot of countries are abandoning nuclear power, Ukraine is constructing and commissioning new power units. The reason given is that Ukraine is not rich enough to abandon nuclear power and pay for renewable energy. However, this statement is quite disputable<sup>3</sup>. The experience of some countries shows that the construction of nuclear power units can take much more time and money than originally planned. A striking example is the plant at Olkiluoto, Finland, being constructed by the French state-owned company Areva, which has doubled in costs and construction time. Another significant fact about nuclear power stations, apart from the problems of the disposal of nuclear waste, is that these plants are not only expensive to construct, but are even more expensive to shut down and to decommission.
- The increased emphasis on NPPs, moreover, jeopardizes the **security of supply** given that operations would fully depend on fuels imported from abroad: “Ukraine has had uranium mining activity since 1948 and can supply about 30% of its own needs. It also produces the zirconium alloys needed for fuel elements, but uranium enrichment and manufacture of finished fuel assemblies takes place in Russia”<sup>4</sup>.
- Finally, Ukraine should pay more attention to its huge biomass potential, especially when considering the heating sector.

## 2.4 Bio energy/Biomass

- Throughout the entire document there is little mention of Bio energy or Biomass technology for either energy or heat production during the 2010-2030 period.
  - Due to the necessity to increase energy security, Bio energy development should be one of the highest priorities for Ukraine, accounting for potentially 15% of the country’s energy balance. Moreover Bio energy would have a number of positive

<sup>3</sup> In order to reach a potential installed capacity of 10 -15 GW of wind energy in Ukraine, a total envisaged investment of UAH 200 Bln is necessary. However, in the current situation such sum is unavailable, unlike for investments in additional NPP power units which are planned to amount to UAH 265 Bln...

<sup>4</sup> [http://www.world-nuclear-news.org/NP-Good\\_prospects\\_for\\_Ukraines\\_nuclear\\_fuel\\_future-1502101.html](http://www.world-nuclear-news.org/NP-Good_prospects_for_Ukraines_nuclear_fuel_future-1502101.html)

outcomes: creation of new employment, development of local economies, and environmental improvements.

- Ukraine has a large potential of biomass available for energy production. The economic potential of biomass is estimated at 27 Mln TCE/yr. The main components of the potential are agricultural residues and energy crops. The utilization of the biomass potential for energy purposes can satisfy about 13% of Ukraine's energy demand.
- The development of the bio energy sector should be part of the fuel-energy complex of the country and should be based on a reasonable and consistent approach.
- The legislator gives a peculiar explanation why biomass development has no prospects for the near future. It is evident that Ukraine is able to provide stable procurement of raw materials for producing electricity from biomass. Furthermore, investors are especially interested in this sphere in due consideration of the fact that "green" tariffs may be awarded for the electricity produced from biomass. In addition, on July 4, 2012 the Verkhovna Rada of Ukraine passed the bill No 10183 "On Amendments to the Law of Ukraine "On Electric Power Industry" (on promotion of electricity generation from biogas) into law. The Law envisages a 2.7 coefficient for the electricity produced from biogas derived from biomass of plant or animal origin and a 3.0 coefficient – for the electricity produced from domestic waste.

## 2.5 District Heating

- A special Chapter (3B) in the document addresses some of the issues of Heat Energy. The questionable parts of the heat energy chapter are the **assumptions** made. According to the forecast basic scenario, total consumption of heat energy by 2030 will increase to 271 million GCals, or slightly more than 15% compared to the base year 2010. The biggest growth is expected in the "Other sectors" (commercial and public sectors) due to the expected increase of the specific area required per person by more than 3 times. From our point of view, such a dramatic increase is unrealistic taking into account the limited financial resources of the government to invest in public infrastructure.
- The proposed measures for heating energy system development are **too general and not well defined**. The document proposes to meet projected demand based on the current realities under any scenario. According to the Strategy, the main direction for development of heat generation, transportation and distribution systems should be lowering of the levels of natural gas consumption due to increase of efficiency of its use, development of heat supply systems based on electricity, coal, nuclear power, alternative and renewable energy, secondary energy resources, natural heat resources, and so forth.
- Moreover, the Strategy mentions that the structure of heat production in 2030 would presumably depend on the relative cost of its production on the basis of each source. The proposed strategy does not have a vision or plan of actions needed to make the heating sector efficient, reliable, and affordable for consumers.
- The proposed investments of 84 billion UAH in the heating sector look unrealistic in the light of current level of sector investment, the financial resources of the Government, the lack of incentives for the population and private investors to participate in energy efficiency activities, and the lack of any identified reliable sources of financing.

Overall, although the paper claims that RES development is a priority, it is kept as a potential future development ("in the long term time horizon the RES shall develop using the principle of economic competition" p.51), should certain favourable conditions arise which would provide an additional economic incentive to develop such technologies. This restrictive approach will keep Ukraine behind vis-a-vis other countries and will end up costing more than initially anticipated!

We therefore urge the Ministry and the team responsible for the Strategy update to review the approach in this specific sector, including the development of new laws, regulations and internal procedures to provide

incentives to investors and guarantee that newly adapted laws are applicable and do not have declarative character.

### **POSITION 3 - Environmental impact from the development of fossil fuels has to be taken deeper into the consideration.**

- On p.44, the draft Strategy states that “Ukraine has huge potential for trading quotas and can actively cooperate under joint implementation [...]”. However the Kyoto Protocol Compliance Committee of the United Nations has already given Ukraine a “green light” to resume its participation in international trading in greenhouse gas emission quotas. This decision was made at the 19th meeting of the enforcement branch of the Compliance Committee in Bonn, Germany, on Friday, March 9, 2012. This outcome signifies that Ukraine has resumed its participation in international trading in greenhouse gas emission quotas emissions trading, according to the press service of the State Environmental Investment Agency of Ukraine.<sup>5</sup>
- No consideration has been made within the draft Strategy of the negative consequences of the aggressive development of Fossil Fuels production. New international laws might be enforced and new alternative objectives might be introduced, such as the Kyoto Protocol. In such case the economic consequences might prove to be very negative (new taxes on CO<sub>2</sub> emissions; revision of base level of emissions for Ukraine which was distorted within the Kyoto Protocol agreement by using 1990 levels; etc.).

### **General Comments about the Draft Strategy document**

- There is no significant difference between the 3 scenarios. All three are based on changes of the GDP growth and do not adequately consider other important variables such as changes in energy prices, increased environmental concern, moral issues and current understanding of these within the population regarding energy usage, and the decrease in the population of Ukraine (disregarded in the draft as a factor influencing Demand).
- Given that the Reference scenario and the Best Case scenario differ by minimal figures, one could introduce an alternative scenario in which the prices of gas and energy increase in general (i.e. as a result of new gas pipeline developments from Russia, bypassing Ukraine, to supply the EU); a share of 15% of RES is gradually achieved by 2030; energy efficiency impacts to lower Demand by 10% (given the energy intensity of Ukraine this should be higher); grid loss reduction to 6.5% (given the additional intervention on existing infrastructure); Coal and Nuclear production slightly reduced, and Imports kept to a minimum.
- Conversion Factors are not clear and need to be clearly referenced by source and calorific value. For example, on p.9, “Fuel and Energy Balance” the CAGR (aggregate growth rate) of Power Generation from Non-Fossil Fuels in TWh is 63% while for MIn TCE it is 48%. A review of such figures is required.
- Moreover, some minor mistakes should be corrected to avoid confusion and question credibility. For example, in the Table on p.9 “Forecasted Fuel and Energy Balance”, the value for Fossil Fuel production is 71.9 MIn TCE while on Page 10 it becomes 70.9 MIn TCE. Given the total Supply of 231.8 MIn TCE, 70.9 MIn TCE should be the correct figure.
- There are no information sources cited whatsoever. Any and all sources from which figures have been taken, for the development of the tables from P.9-22 and subsequent chapters, should be clearly indicated and be consistent with one another. In particular, the reference for consolidated 2010 data is indispensable. For example: the draft Strategy shows a consolidated

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<sup>5</sup> <http://www.kyivpost.com/content/ukraine/ukraine-complies-with-kyoto-protocol-requirements.html>

2010 Total Energy Supply of 131.9 Mln TCE, while another official source shows 186.12 Mln TCE.

- A focus on the quality and consistency of all references and data throughout the chapters should be maintained. Currently, the impression is that data is considered as a “collage”, with document sections created by various entities rather than by a single authority.
- The overall structure of the Demand/Supply balance is in reverse. There should first be a clear assessment of the Demand and then a review of the sources of supply to cover this. Moreover, when considering 3 scenarios, all 3 should encompass the same items: on p.16, the demand table for the Reference scenario is complete with division of Net Consumption by sector; Transmission and Distribution Losses; and Export. The other two scenarios only give a glimpse, and the data is limited to Total; Gross Consumption; and Exports. If three scenarios are considered they each hold equal value and should contain the same quality of data.
- The data in both tables and text should be coherent: there should always be a reference Unit for all items (if we choose to use Mln TCE, the conversion into Mln TCE should be present everywhere, while showing the original value – TWh, Bcm, Mln Tons, etc.). In order to be precise the draft Strategy should also have present the calorific values considered for each Unit, as these can vary considerably.
- Incoherence between tables on pages 9-22 and text presented. For example: the tables elaborated at the beginning of the draft Strategy should represent a snapshot of the details discussed in all chapters. It is mandatory that numbers and figures correspond to each other and use the same values or units.

## **CONCLUSIONS**

The efforts undertaken by the Government in reviewing the previous Strategy to 2030 are undoubtedly commendable, but we believe that there is still a great deal of work to be done to achieve coherence of stated goals with the plans that are actually presented.

When cross-referencing the data between the EE chapter (p.112) and those of the RES chapter (p.51) we find that the approach used is questionable. We advise describing a clear methodology to implement in order to guarantee the reduction of energy intensity in Ukraine. The overall cost of considered actions is never properly assessed, leading us to conclude that there will not be a particular focus or stringent approach for enforcing the measures necessary to reach real objectives, but rather a focus only on the economic principle of low-cost production to maximize profits while overlooking environment and real long-term costs.

Considering RES, there is no intention of giving the related technologies the opportunity they deserve to establish themselves within the Ukrainian energy sector.

It is clear from the draft Strategy that it is not expected that RES will have a predominant role, in installed and generation capacity. We would have expected something more in line with European standards: 15% by 2030 would have been acceptable and possible for Ukraine to achieve. However, looking at both balance tables (p.9-22) and the relevant RES chapter (3.C.), it is clear that RES are seen as marginal and only appreciated for their eventual potential, rather than their strategic benefits and environmental compliance. Moreover, the proposed draft has a number of incorrect or unrealistic assumptions and a lack of solutions to address current problems in the heating sector such as energy audits, energy performance of buildings; state regulation of the district heating sector, nor links between energy efficiency investments and clean energy initiatives (CO2 reduction).

The EUEA Working Group Members and other market stakeholders with whom we have discussed the draft Strategy are concerned that Ukraine is drawing the wrong approach to its development of the Energy

sector and we fear that long term costs will significantly outweigh the short term benefits that the Government seems to be aiming for instead, as it focuses on an unrealistic policy of low energy prices.

Ukraine will need to clearly state whether it will choose the path defined by the Energy Community or not. If it chooses to abide by the Energy Community, the target has already been set in renewable sources, and this would, therefore, not be a subject for further discussion.

Moreover, Ukraine definitely cannot ignore its biomass potential, which is one of the best in Europe.

Finally, the world experience has already shown that nuclear power is not cheap power – the overall costs and time frame for construction of nuclear power stations considerably exceed those for renewable sources.

Anticipating problems and changes would be a better and more economic approach for Ukraine than anticipating that the market will change drastically and unrealistically, a reality to which Ukraine may not be able to adapt to quickly enough given the approach expressed in the current version of the draft Energy Strategy.

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