Improving the existing carbon charge in Ukraine as an interim policy towards emissions trading

A discussion document for stakeholders in the PETER (Preparedness for Emissions Trading in the EBRD Region) Project, sponsored by the European Bank for Reconstruction and Development (EBRD)

www.ebrdpeter.info

By

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London, October 2014
ACKNOWLEDGEMENTS

This report has been prepared by a consortium led by Thomson Reuters Point Carbon as part of the work under the project “Preparedness for Emissions Trading in the EBRD Region” (PETER) which was initiated and is sponsored by the European Bank for Reconstruction and Development (EBRD). The project is funded from the EBRD Special Shareholders Fund.

The Ukrainian State Environmental Investment Agency (SEIA) has provided strong support throughout the Project.

The PETER consortium partners are Thomson Reuters Point Carbon, Baker & McKenzie, Carbon Limits and Climate Change Coordination Centre Kazakhstan.

Valuable inputs have been received from the following TRPC collaborators: Institute for Economics and Forecasting (IEF) of Ukraine; Environmental Green Investment Fund (EGIF) in Ukraine; Aleksandr Pavlyenko; Yevgen Groza; Vladimir Laskarevsky; Dr. Andreas Maestle.

EBRD valuable comments were made by Isabel Blanco, Sergiy Maslichenko, Janina Ketterer, Angela Delfino and Jan-Willem van de Ven.
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1 INTRODUCTION

Carbon pricing\(^1\) is being implemented in a growing number of countries and regions as a key policy measure to bring greenhouse gas emissions under control, improve industrial efficiency and competitiveness, and meet standards, targets and expectations of the international community in the face of climate change. Direct carbon pricing policy options usually take the form of taxes on greenhouse gas (GHG) emissions, or emissions trading, or a combination of both. These policies are often in conjunction with other policies such as energy efficiency and renewable energy targets.

In 2010, Ukraine’s Parliament approved the introduction of taxes on GHG emissions, which came into effect in 2011 as part of a wider Environmental Tax designed to limit emissions of various pollutants into the atmosphere, water and soils. The current Environmental Tax applies to Stationary Sources of Pollution (SSP) as well as Mobile Sources of Pollution (MSP). The GHG tax component covers virtually all stationary sources of GHG emissions, mainly power sector enterprises and processing industry including metal and coke production, chemical and petrochemical, cement and food industries. The 2014 tax rate on CO\(_2\), the most emitted GHG, is UAH 0.26 (€0.017\(^2\)). Primarily due to this low rate, the current tax system does not seem to be a driver for reducing GHG emissions. The Government of Ukraine now aspires to improve the GHG tax system, including raising the tax rates and introducing more stringent monitoring, reporting and verification (MRV) requirements in connection with it.

In line with the Association Agreement between Ukraine and the EU, Ukraine also plans to develop and implement an Emissions Trading Scheme (ETS) over the next few years. An improved carbon tax would provide a useful bridging and transition mechanism into an ETS, and indeed, elements of a carbon tax system may run successfully side-by-side with an ETS. In addition to closer ties with Europe, such an arrangement would help fulfil several important policy objectives of Ukraine, including stimulating capital for increased industrial efficiency, increased energy security and preparation towards a post-2020 international climate agreement.

The Government of Ukraine has therefore requested EBRD consultants to conduct two tasks as part of the PETER\(^3\) project:

1. Analyse the existing carbon charge and propose improvements to it as an interim policy towards emissions trading; and
2. Prepare a road map for a transition from an enhanced carbon tax to a domestic ETS.

This report focuses on the first task and proposes several improvements to the existing GHG taxation system. The other tasks will be reported in a separate report.

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\(^1\) The term ‘carbon pricing’ is used in this report to describe policies that impose a price on CO\(_2\) emissions as well as other greenhouse gas emissions.

\(^2\) Exchange rate as of July 25, 2014 on www.xe.com

\(^3\) Preparedness for Emissions Trading in the EBRD Region (PETER) [www.ebrdpeter.info](http://www.ebrdpeter.info)
2 PROPOSAL SUMMARY

The objectives for improvement of the current carbon tax system are as follows:

1. Help Ukraine to meet international GHG reduction commitments which are currently under consideration, such as the 2013-2020 emission levels specified under the Doha Amendment (if Ukraine ratifies the second period of the Kyoto Protocol); and a 2030 target on the trajectory of a 50% reduction in GHG levels by 2050 on a 1990 baseline.

2. Provide entities with a carbon price high enough to act as an incentive to invest in GHG emission reduction technologies and processes.

3. Increase awareness of carbon pricing across the sectors and help relevant entities to prepare for an emissions trading scheme.

4. Reduce transaction costs for smaller emitters.

5. Eliminate uncertainties in relation to monitoring, reporting and verification in hard-to-measure sectors.

6. Address carbon leakage risks at the same time as including large manufacturing entities under the tax system.

7. Introduce the concept of tradable units through the early introduction of a domestic offset market, and build and improve on the experience with Joint Implementation.

In order to achieve these objectives, the improvements proposed are to:

1. Introduce two tax bands for stationary sources of pollution, with the lower tax band applied to sectors where carbon leakage has been identified by the European Commission as a significant risk or are classified as Emission Intensive Trade Exposed industries (such as iron and steel); and the high band for sectors which are not predominantly active in an export market (such as electricity and heat producers). Indicative tax rates under the two tax bands are described later in this section.

2. Introduce a domestic emission reduction market mechanism, where non-covered (non-taxed) entities and sources, and entities under the low tax band can produce emission reduction units to sell to entities under the high tax band to offset their tax liabilities and lower their tax compliance costs.

3. Take hard-to-measure sectors such as Waste, Agriculture, Forestry and Fugitive emissions out of Tax for the time being, but allow them to participate in the emission reduction market. Later, when measurement systems improve, consideration can be given to bringing these sectors back into the scope of the tax. This is similar to the approach taken by carbon tax schemes in advanced stages of development or under implementation, such as those in Mexico, South Africa, Chile and Norway.

4. Take most entities which emit less than 25,000 tonnes CO2e out of the tax altogether, but allow them to participate in the emission reduction market. Such entities are responsible only for approximately 5% of currently taxed emissions in Ukraine and would face high transaction costs if participating in the early stages of a strict and elaborate MRV regime. Again, smaller entities can be brought back into the tax later after MRV processes are standardised and widely understood in Ukraine.

The scope of the tax is illustrated in Figure 1 below:
For emission reduction projects, introduce standardised baselines and methodologies for project-based emission reduction measurement processes as developed under widely accepted international standards such as the Clean Development Mechanism (CDM) and the Verified Carbon Standard (VCS) – to ensure real and additional emission reductions.
6. Introduce a common tax rate unit for different GHGs per tonne of carbon dioxide equivalent, to harmonise the rate in relation to their Global Warming Potential (GWP).

7. Recycle tax revenues to lower decile income groups to offset the hardship caused by increased prices using existing social support mechanisms or new mechanisms if required; and to industry and local government budgets to promote technology innovation, emission reduction and other environmental projects.

Introducing a meaningful carbon tax based on robust MRV systems in advance of an ETS has the following further advantages:

- In the lead-up to an emissions trading system, companies in other jurisdictions have been known to over-report emissions leading to inaccurate sectoral emissions baselines which in turn leads to establishment of higher caps than justifiable. However if companies are paying a meaningful carbon tax on their emissions, they are incentivised to report much more accurately which will help in the development of accurate emissions baselines to inform the ETS cap.

- The carbon tax system already exists and can be made more robust quite quickly in comparison to the development and implementation of an ETS.

- The carbon tax system outlined below can generate estimated revenues of about USD 33.8 billion up to 2030. The proposed offset market of up to 7.4 billion USD would reduce tax revenues to a total of 26.4 billion USD from 2016 to 2030 (the size of the offset market depends on the implementation speed of MRV).

According to economy-wide modelling conducted by the Institute for Economics and Forecasting of Ukraine, simple increases in the tax rate for all currently covered entities results in a small negative effect on GDP, especially over a short time frame (e.g. up to 2025) but which reduces over a longer time frame (e.g. up to 2050). Redistributing revenues to industry and to the population would have the least negative effect on the long-term growth of the economy.

The timing of the transition between carbon tax and ETS will be important especially in the light of the Ukrainian Government’s climate policy obligations under the EU-Ukraine Association Agreement, and for this a roadmap will be developed as part of Task 2 within the PETER project.

3  PROPOSAL DETAILS AND SUPPORTING ANALYSIS

3.1  OPTIMISING TAX COVERAGE, AND BUILDING A SUPPORTING OFFSET MECHANISM

3.1.1  Taking smaller entities out of GHG Tax system

Ukraine has approximately 11,000 entities that report on emissions of pollutant substances (PS) from SSP, of which about 5,500 report on CO2 emissions. This very large number of respondents is due to the legislation of Ukraine where the mentioned statistics are required to be submitted by all entities that are taken on the state inventory in the field of air protection. The criteria for inclusion into the state inventory is the presence of one or several major GHGs in the emissions of SSPs. Objects emitting from 500 tons CO2/ year are taken into account in the State Inventory. Under this criterion, for example, objects with boilers heating hot water that run on natural gas, with nominal heat output of over 250 kW, are taken into account. It should be noted that within the EU much higher
thresholds of PS emissions are set from which entities are required to report these emissions (regulation number 166/2006).

Analysis of the reporting of CO₂ emissions showed that captured entities emitted 198.2 million tons of CO₂ in 2012, which was about 66% of all CO₂ emissions in Ukraine in that year. Approximately 80% of these emissions originate from less than 1% of the total population of stationary sources and 95% of these emissions arise from about 5% of the population or 333 point sources. It is critical therefore that the MRV strengthening process is focused first on these large emitters. The cumulative distribution of sources is shown in the Figure below (note that the x-axis is a logarithmic scale).

A robust monitoring, reporting and verification (MRV) system is required to provide a solid foundation to a carbon accounting system. However, several challenges in the current GHG emissions and fuel use reporting system need to be overcome to achieve an effective MRV system. For example, the current system for calculation of Environmental Tax requires GHG data at enterprise level rather than plant level. This data is submitted within form
of state statistical observations on air protection “#2-tp (air) Report on air protection” and includes all GHGs of direct effect. However, the data from these forms is difficult to use as there is:

- large indeterminacy of reported data on GHG emissions
- inconsistency of GHG calculation methods
- lack of quality control of background data used to calculate GHG emissions;
- non-performance of internal and external control of reporting data.

Further, the provisions of the Law On State Statistics with regard to confidential information make it impossible to obtain the data on the volume of production (consumption) of raw materials at the level of plants.

The forms of statistical observations at the level of plants are filed in the regional offices of the State Statistics Service of Ukraine. They are difficult to organize and analyse due to the:

- complex format of forms;
- different data media (paper, electronic);
- large number of reporting enterprises, which can lead to unnecessary costs for processing information etc.

Until a suitable MRV system can be designed and efficiently and effectively implemented, it is proposed to limit the scope to a relatively small number of larger emitters. Once monitoring and reporting procedures are established and domestic entities have experience with verification, measures can be designed which will lower the transaction costs so that smaller emitters can be included if necessary.

The Ukrainian government is currently considering the development of a robust MRV system for the use of entities emitting more than 25,000 tCO2e. For small and medium-sized enterprises, the transaction costs associated with a robust MRV system can be disproportionately high and as such, the Ukrainian Government may also consider the development of simplified MRV systems for smaller entities which could, for example, include less frequent verification of reported data with the scope of the verification covering, for example, three years’ emissions.

Emissions from most covered sectors are predominantly from entities emitting more than 25,000 CO2e p.a., apart from manufacturing of wood products, and machinery and equipment (see Table below). Using emissions data as a proxy for output suggests that in both of these sectors, plants with emissions between 10,000 and 25,000 tonnes per annum produce more than 10% of the output of large plants and are thus considered to be a significant source of competition. In order not to disadvantage large producers in these two sectors, it is suggested that initially, the threshold for tax coverage should be 25,000 tonnes of CO2e p.a. for all covered sectors, with the exception of wood products and machinery and equipment, where the threshold would be 10,000 tonnes.

### 3.1.2 Taking hard-to-measure sectors out of tax

As of now, all stationary sources of pollution that meet the criteria above are included under the GHG tax system. However, robust methodologies are currently unavailable for reliable accounting of GHG emissions from distributed sources (e.g. landfills, croplands, forested areas, methane emissions from fossil fuel extraction etc.)

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5 This exception is made due to unique sector compositions where there are very many entities in these sectors which lie just below the 25,000 tonne threshold – meaning that entities just above the threshold would be unfairly disadvantaged against similarly sized competitors.
Due to these methodological and accounting issues, most countries have chosen to keep these sectors out of the scope of carbon taxes and emissions trading, at least for the initial stages.

Proposals are being drawn up for improvement for MRV systems in Ukraine. The proposals as they stand recommend developing MRV systems in stages – at first a pilot, covering the major emitting sectors and GHG in Ukraine, and meant for use by installations emitting more than 25,000 CO2e per annum. Under the proposals, the types of activity covered would be:

1. Stationary combustion of fuels
2. Production of Iron and Steel
3. Production of Ferroalloys
4. Metallurgical coke production
5. Production of Cement
6. Production of Ammonia
7. Production of Limestone
8. Production of Nitric Acid
9. Production of Adipic Acid

This pilot would be followed by expansion of MRV processes into other sectors as necessary

With respect to the coverage of the GHG tax system, the approach taken by the project team is to narrow coverage to sectors where establishment of reliable measurement systems is more possible, for the initial years of the tax. These sectors include power and Heat production, and many manufacturing sectors. Sectors where measurement is particularly difficult (and which are typically excluded from initial stages of carbon pricing systems) should be excluded for the initial stages. These include Agriculture, Waste, Fossil Fuel Extraction, Mining, Gas Production and Distribution.

A GHG tax can be applied upstream (“upstream” (on carbon content of fuels), “downstream” (on emitters), or some combination (upstream tax on fuels, downstream tax on process emissions). In Ukraine it is proposed that the tax is applied downstream on all SSPs. The fuel charge is already applied upstream in Ukraine.

3.1.3 Guarding Against Carbon Leakage

Implementing a carbon tax threatens the international competitiveness of products which are sold into markets where other suppliers are not required to pay the tax. Figure 3 below presents a simple case. Before the implementation of the tax, production costs are USD 50 per unit whilst the international price is USD 65 enabling this producer to profitably sell the product. After the tax is applied at USD 20 per unit, the product is no longer competitive and the industry will either close down or relocate to an un-taxed jurisdiction. However, after the implementation of low carbon technology, production costs could fall to USD 40 per unit with a tax of USD 5, allowing the producer to compete in international markets once again.
Figure 3: Carbon leakage example

The risk of leakage arises because of the absence of an ambitious international agreement on climate change potentially undermining the benefit of actions carried out by individual countries such as Ukraine, or collective action as in the EU. As described in the examples above, the absence of binding action at the international level could lead to the relocation of industry to countries where it is not subject to comparable carbon constraints (‘carbon leakage’). To address this risk of carbon leakage, the European Commission has determined a list of sectors and subsectors deemed to be exposed to a significant risk of carbon leakage, which policy makers to take into consideration where relevant.

The proposed list for 2015-2020 comprises most of Ukraine’s major manufacturing sectors and sub-sectors and as such it is currently proposed that all Manufacturing is included in the low tax band with the option to participate in the domestic offset market. (Note: the project team is trying to obtain disaggregated data to try to separate currently taxed manufacturing entities into those which are at risk of carbon leakage, and those which are not. Identification of the relevant sectors will enable them to adopt a proactive approach on investments in energy saving and carbon-reduction activities, and, therefore, could ease the compliance burden for the export-oriented industrial enterprises).

3.2 CREATING A DOMESTIC OFFSET MARKET

In the context of the Ukrainian GHG Tax system, a GHG offset is the result of an investment project which generates a reduction in GHG emissions compared to a baseline under an adopted methodology. Some or all of these reductions can be sold to another entity which is paying a higher level of tax and which has higher GHG mitigation costs – this allows the buying entity to access GHG mitigation options in a lower-cost manner when compared with: 1. carbon pricing policy compliance (i.e. simply paying the tax), and/or 2. GHG reduction investment in its own operations.

Under the current proposals, sectors which are either not covered by the GHG tax or are within the low tax band would be allowed to create offset units through carbon reduction projects, for sale to sectors and entities covered under the high tax band to lower their tax compliance costs, similar to the principle of the JI mechanism. This includes manufacturing sectors which are covered under the low tax band, and sectors such as transport, land use, waste and fugitive emissions which would be taken out of the GHG tax in Ukraine and allowed to create offset
projects. Further, power conservation activities in housing would also be allowed to create offsets. This would allow a very wide range of emission reduction activities to be implemented under the offset mechanism in Ukraine. The advantages of such a system include:

- High taxed entities can lower compliance costs by implementing their own internal reduction projects and/or purchasing offsets
- Low taxed entities are encouraged to implement projects to either reduce their own tax burden and/or generate revenues to finance low carbon technologies
- Uncovered entities are provided with a mechanism to help finance investments in low carbon technology. This would promote action in sectors not currently incentivised to generate carbon reductions, such as the housing sector
- Sector-specific project methodologies and measurement and verification systems in the non-taxed sectors will improve as a result of verified offset projects
- Industry will become increasingly accustomed to a ‘market’ based mechanism in the lead up to the introduction of a cap and trade system
- GHG offsets will also incentivise investment in least-cost mitigation options in Ukraine. This will drive investment in projects that deliver GHG reductions at lower costs than the GHG tax system.

There are many instances where offsets and carbon tax/emissions trading have existed side-by-side however it is unusual to propose a system where taxed entities can also produce offsets. One challenge here is to avoid the issue of double counting, where taxed entities reduce their emissions, pay lower tax but then also sell the GHG reductions as offsets—thus counting them twice.

Double counting is addressed by requiring the low tax paying entities to pay the tax even when they implement projects and sell the resulting offsets. In the event that they choose to implement offset projects, they will still pay the low rate tax on their baseline emissions, as monitored, reported and verified in the monitoring report for the offset project. Under this approach, tax is paid on all eligible emissions but the overall tax burden on industry is reduced by low tax payers who implement projects, pay tax on the baseline emissions (not project emissions) and transfer emission reductions to high tax payers who offset their tax and hence pay less tax. Like under JI, the transfer of offsets within the scope of the taxation policy is a zero sum transaction with the sum of taxed emissions remaining the same with or without the transfer between low and high tax payers. In both cases total emissions are reported but the sale of offsets effectively reduces the number of emissions on which the high tax level is paid. It is important to note that the concept of financial additionality is not required to create offsets because the transfer takes place within the scope of the tax accounting framework. Only “environmental additionality” (i.e. a reduction in emissions compared to a verified baseline) is required. This is equivalent to Track 1 issuance under JI and it does not threaten the environmental integrity or create double counting because all emissions are reported and taxed.

The baseline against which offsets are created requires either project level baselines or standardised baselines or benchmarks. Standardised baselines or benchmarks are preferred because they simplify the process and help to avoid rewarding the worst performers.

A number of carbon offset standards have been developed under both voluntary and compliance carbon offset schemes and used in other countries, such as the Clean Development Mechanism (CDM), Verified Carbon Standard (VCS), Gold Standard (GS) and the Climate, Community and Biodiversity Standard (CCBS). Methodologies from all of these standards could be considered for offset projects in Ukraine by the relevant authority.

Ukraine has wide experience of generating Emission Reduction Units (ERUs) under Joint Implementation. The ERUs were generated in the activities of: coal waste heap dismantling; natural gas distribution; reduction of power
transmission losses; Iron and Steel production; renewable energy and transport. Many of these projects (especially related to the first three activity types mentioned above) were however criticised for a lack of integrity. If these sectors are to generate offsets, they will need to follow strict methodologies and verification processes which may mean that offset project implementation is quite slow in the initial years.

### 3.2.1 Coverage Summary

The Figure 4 below shows in more detail how the tax-and-offset system would work.

![Figure 4: Schematic representation of the scope of the tax and offset system.](image)

The Figure 5 and Table 1 below show how the coverage of existing covered entities will change under the proposed system of two tax bands and an offset market. Under the proposals, 95% of entities are taken out of tax altogether but this only represents 17% of currently covered emissions. These entities are allowed to create offsets, however. Three percent of entities move to a high tax band, representing 48% of emissions. Two percent of entities move to a low tax band, and are allowed to create offsets – these entities represent the remaining 36% of currently covered emissions.

![Figure 5: Distribution of currently taxed entities under the proposed system](image)
Table 1: Proposed allocation of entities to high tax, low tax and no-tax bands based on 2012 data

<table>
<thead>
<tr>
<th>Activity name</th>
<th>Currently Taxed Entities emitting more than 25,000 t(\text{CO}_2) p.a.</th>
<th>Entities emitting between 10,001 t(\text{CO}_2) and 25,000 t(\text{CO}_2) p.a.</th>
<th>Remaining taxed entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 Emissions, t(\text{CO}_2) p.a.</td>
<td>Number of entities</td>
<td>Emissions, t(\text{CO}_2) p.a.</td>
<td>Number of entities</td>
</tr>
<tr>
<td>Manufacture of wood &amp; wood products; manufacture of pulp, paper and paper products; publishing and printing</td>
<td>5</td>
<td>365,362</td>
<td>7</td>
</tr>
<tr>
<td>Manufacture of coke oven products; processing of nuclear fuel;</td>
<td>12</td>
<td>3,985,817</td>
<td>0</td>
</tr>
<tr>
<td>Manufacture of refined petroleum products</td>
<td>5</td>
<td>1,011,773</td>
<td>2</td>
</tr>
<tr>
<td>Manufacture of chemicals and chemical products; manufacture of rubber and plastic products (excluding fertilizer)</td>
<td>8</td>
<td>1,600,395</td>
<td>6</td>
</tr>
<tr>
<td>Manufacture of other non-metallic mineral products</td>
<td>22</td>
<td>5,504,757</td>
<td>15</td>
</tr>
<tr>
<td>Manufacture of machinery and equipment</td>
<td>12</td>
<td>900,945</td>
<td>7</td>
</tr>
<tr>
<td>Manufacture of textiles and textile products; manufacture of wearing apparel; dressing and dyeing of fur</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fertilizer production</td>
<td>7</td>
<td>5,577,766</td>
<td>0</td>
</tr>
<tr>
<td>Manufacture of basic metals and fabricated metal products</td>
<td>24</td>
<td>59,010,298</td>
<td>5</td>
</tr>
<tr>
<td>Production and distribution of electricity</td>
<td>39</td>
<td>91,585,132</td>
<td>2</td>
</tr>
<tr>
<td>Steam and hot water supply</td>
<td>115</td>
<td>13,146,952</td>
<td>50</td>
</tr>
<tr>
<td>Mining/ quarrying (excluding fuels)</td>
<td>4</td>
<td>3,054,131</td>
<td>7</td>
</tr>
<tr>
<td>Manufacture of food products, beverages and tobacco</td>
<td>21</td>
<td>1,154,467</td>
<td>43</td>
</tr>
<tr>
<td>Manufacturing n.e.c.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Construction</td>
<td>4</td>
<td>600,853</td>
<td>1</td>
</tr>
<tr>
<td>Activity of transport; post and telecommunications</td>
<td>52</td>
<td>5,428,301</td>
<td>33</td>
</tr>
<tr>
<td>Agriculture, hunting, related activities</td>
<td>7</td>
<td>485,402</td>
<td>19</td>
</tr>
<tr>
<td>Mining of coal and lignite; extraction of peat; mining of uranium &amp; thorium ores</td>
<td>85</td>
<td>14,177,327</td>
<td>23</td>
</tr>
<tr>
<td>Extraction of crude petroleum and natural gas</td>
<td>15</td>
<td>1,607,767</td>
<td>5</td>
</tr>
<tr>
<td>Manufacture of gas; distribution of gaseous fuels through mains</td>
<td>10</td>
<td>681,054</td>
<td>17</td>
</tr>
<tr>
<td>HIGH TAX</td>
<td>34%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>LOW TAX</td>
<td>21%</td>
<td>37%</td>
<td>6%</td>
</tr>
<tr>
<td>NO TAX</td>
<td>44%</td>
<td>13%</td>
<td>94%</td>
</tr>
<tr>
<td>GRAND TOTALS</td>
<td>447</td>
<td>209,878,499</td>
<td>242</td>
</tr>
<tr>
<td>Share in total</td>
<td>96%</td>
<td>2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Legend:
- Low Tax band, stays under Tax mechanism - offset seller
- High Tax band, offset buyer, stays under Tax mechanism
- Comes out of tax, offset seller
3.3 MEETING INTERNATIONAL GHG REDUCTION COMMITMENTS UNDER CONSIDERATION

The EU Association Agreement states that the Party needs to align its legislation with EU climate policy. As such, although neither has been declared a formal commitment by the Government of Ukraine, the project team has used two possible international commitments in order to model the reductions required by 2020 and by 2030 as against projected baseline emissions:

- Article 3, paragraph 7, of the Kyoto Protocol was amended in Doha to stipulate that any positive difference between the assigned amount of the second commitment period for a Party included in the Annex I and average annual emissions for the first three years of the preceding commitment period multiplied by eight shall be transferred to the cancellation account of that Party. For Ukraine, this effectively sets the target for 2013 – 2020 (discounting sinks) as 390 Mt of CO2e per year. The Government of Ukraine is currently considering whether to ratify the second commitment period of the Kyoto Protocol which would mean accepting this commitment.

- In 2009, in the lead up to the Copenhagen summit, Ukraine pledged to reduce emissions by 50% from 1990 levels by 2050.

If Ukraine decided to adopt both the commitments above, the project team’s projections show that cumulative GHG reductions of 201 MtCO2e would be required by 2020, and 893 MtCO2e by 2030, against the projected business as usual emissions.

Taking into account the EU Association Agreement signed by the Ukrainian Government and the EU on 27 March and 27 June 2014, and ratified on September 16, 2014, Ukraine will need to align its legislation with the EU acquis communautaire. The legislation approximation will include, among other things, climate policies, as per Annexes XXX and XXXI to the Chapter 6 of the EU-Ukraine Association agreement. The Annex XXXI addresses the following:

- Implementation by Ukraine of the Kyoto Protocol, including all eligibility criteria for fully using the Kyoto mechanisms;
- Development of an action plan for long-term (i.e., post-2012) mitigation of and adaptation to climate change; and
- Development and implementation of long-term measures to reduce emissions of greenhouse gases.

The reference to the Kyoto Protocol in the Annex might be interpreted in different ways by the Parties, especially in terms of timing; and it is expected that the issues shall be further clarified during bilateral negotiations. For the purposes of our assessment we considered Ukraine to take on climate-related obligations in line with those the previously listed.

Figures 6 below illustrates the baseline trajectory as determined in 2013 and the emission trajectory required to meet the proposed commitments. Figure 7 illustrates the cumulative emission reductions which are required to achieve the commitments:

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Figure 6: Baseline Emissions Trajectory and trajectory required to meet potential international commitments

Figure 7: Cumulative projected shortfalls from baseline emissions if potential international commitments are to be met, MtCO2e

### 3.3.1 Tax levels to help achieve International Commitments

A GHG tax puts a price on GHG emissions. How high must such a price be for Ukraine to achieve the potential international emission reduction commitments described above?

To answer this question a mathematical model (the MACtool) was run with various tax scenarios:
- A Low Tax Band starting with 3 USD per t CO2 emissions in 2016 and going up to 10 USD per t in 2030.
- A High Tax Band going from 11 USD per t CO2 in 2016 to USD 25 per t CO2 in 2030.
- Tax regimes between the High and Low Tax Bands
- Carbon taxes corresponding to forecasted EU ETS prices\(^7\). This scenario was chosen in the context of possible linking of a future Ukraine ETS with the EU ETS.

The tax bands are shown in Figure 8 below. The calculations showed that only the High Tax Band and carbon taxes corresponding to the expected EU ETS prices allow Ukraine to fulfill its international commitments. The other tax scenarios and the carbon taxes presently levied in Ukraine do not create enough cost pressure to induce the necessary investments in emission reducing mitigation activities. Accordingly, a high tax band of USD 11 rising to USD 25 per tonne CO2e by 2030 and a low tax band of USD 3 rising to USD 10 per tonne CO2e by 2030 are proposed.

![Carbon Tax Bands](image)

**Figure 8: Carbon tax bands**

With the High Tax Band emission reductions of 186.8 million t CO2e can be expected for 2014-2020 if all sectors are taxed. This only falls 14 million tonnes short of the 201 million t CO2e cumulative reductions required to meet the 2020 target (Figure 9).

\(^7\) Forecast by Thomson Reuters Point Carbon as of July 01, 2014
Of the 893 million t reductions required to meet the 2030 target, 861 million tonnes seem achievable with the High Tax Band, leaving Ukraine with a reduction gap of 32 million t (Figure 10).

A tax regime according to the expected ETS prices would deliver expected reductions of 920 million t CO2, overshooting the 893 million t reduction requirement by 27 million t CO2.
3.4 COMBINATION OF TWO TAX BANDS AND DOMESTIC OFFSET SCHEME

Rather than taxing all covered entities within the same tax band, the project team has proposed that two tax bands should be used: a high band for sectors not subjected to carbon leakage, and a low tax band for sectors which are at risk of carbon leakage. Further, a domestic offset scheme is proposed where entities covered under the low tax band and all non-taxed sectors should be able to sell offset units to the high tax band entities.

In theory, the combination of tax bands and offset scheme as proposed should encourage the same level of emission reduction overall but with significantly reduced costs for those industries which are deemed to be at risk of carbon leakage. This is because:

- As long as demand outstrips supply, the price for offsets will be just below the price in the high tax band – leading to virtually the same ‘carbon price’ for offset sectors
- Installations covered under the low tax band will need to pay their tax on annual emissions. If they develop GHG reduction projects, they can choose to pay tax on annual emissions before the projects, and then sell reductions made as offsets – achieving the full offset price as long as demand exists, and thus leading to the same effective ‘carbon price’.

According to the modelling results from the MACTool for Ukraine\(^8\), applying Tax Band ‘E’ to all sectors can lead to emissions reductions close to those required under the Doha Amendment and the Copenhagen 2050 targets. However under a tax-and-offset mechanism, all sectors do not need to be taxed at this level; as seen above, such a mechanism can provide a similar incentive to reduce emissions while making it cheaper/more profitable to do so as compared with one single tax level without a complementary offset mechanism. Tax Band ‘E’ can be set as the higher tax band. In relation to the Low Tax Band, Band ‘A’ can be used, as: (1) it is not so high that carbon leakage sectors are put at risk, and (2) It is also not so low that it can be ignored by businesses. As such, a combination of the ‘Low Tax Band’ and the ‘High Tax Band’ (Tax Bands ‘A’ and ‘E’) as shown below may be used.

Table 2: High and low tax bands

<table>
<thead>
<tr>
<th>Year</th>
<th>Low Tax Band (A) USD/t CO2</th>
<th>High Tax Band (E) USD/t CO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>2018</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>2019</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>2020</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>2021</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

\(^8\) Primarily as part of the work under ‘Capacity Building for Low Carbon Development in Ukraine’ project, done for UNDP and funded by the German Ministry of Environment and ... BMU.
To manage the impact of the introduction of higher tax levels, the Government may apply a percentage tax liability, such that it takes several years before all of an entity’s emissions are taxed. This would soften the impact of new regulations compared to 100% tax liability from the date of implementation. This could also incentivise early action in reducing emissions.

### 3.4.1 Emissions Reductions and Their Sources, under Proposed System

As shown in the Figure 12 and the Table 3 below, the MACTool results demonstrate that, under the proposed system, 187MtCO2e of reductions become viable by 2020 as against a requirement of 201 MtCO2e to achieve the Doha Amendment figure; and 861 MtCO2e of reductions become viable by 2030 as against a requirement of 893 MtCO2e to achieve the trajectory required for a 50% reduction by 2050 on a 1990 baseline as offered by Ukraine at Copenhagen 2009. In theory therefore, these tax rates can help bring the country very close to the international commitments.

<table>
<thead>
<tr>
<th>Year</th>
<th>Required</th>
<th>Viable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>2023</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>2024</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>2025</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>2026</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>2027</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>2028</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>2029</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>2030</td>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>

Figure 12: Emissions Reductions - Required and Viable by 2020 and 2030
According to the MACTool results, there are viable reductions already possible even without the introduction of carbon pricing. These total 67 MtCO2e by 2030 within many sectors, as shown in Table 3 below in the column entitled ‘spontaneous reductions’. While no additional reductions become viable under the low tax band, the offset sectors (which include the low tax sectors) demonstrate a possibility of 349 MtCO2e reductions by 2030. A further 445 MtCO2e of reductions become viable by 2030 under the high tax band.

The power sector, under the high tax band, has the highest potential to generate reductions, with viable reductions of 462MtCO2e becoming possible by 2030. About 60 percent of these reductions come from renewable generation, with the remainder resulting from replacing part of Ukraine’s fleet of thermal coal plants by natural gas combined cycle generators (CCGT). Of course, it should be noted that shifting a substantial part of power generation to CCGTs will only be possible if Ukraine can secure a reliable long-term natural gas supply at reasonable cost. Currently efforts are under way to create the pipeline infrastructure that will allow supplying Ukraine with substantial amounts of gas from Western Europe. Further, Ukraine is exploring the potential for shale gas exploitation within its own boundaries.

Approximately 60 MtCO2e become viable in Manufacturing sector, mainly from processing efficiencies in Iron and Steel as well as from reducing natural gas used in Ammonia production.

A total of 369 MtCO2e of reductions by 2030 can come from non-taxed sectors such as Land Use, Waste, Transport and Fugitive Emissions, in the form of offsets. The largest proportion comes from the Land Use sector converting to the use of no-till techniques and use of organic fertiliser.

Table 3: Sources of emission reductions according the MACTool

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Spontaneous reductions</th>
<th>Further reductions viable under Low Tax</th>
<th>Further reductions viable under High Tax</th>
<th>Further reductions viable from offset sectors</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>by 2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>0</td>
<td>N/A</td>
<td>73</td>
<td>N/A</td>
<td>73</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9</td>
<td>0</td>
<td>N/A</td>
<td>23</td>
<td>32</td>
</tr>
<tr>
<td>Land Use</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>71</td>
<td>74</td>
</tr>
<tr>
<td>Fugitive Emissions</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Transport</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Waste</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>12</td>
<td>0</td>
<td>73</td>
<td>101</td>
<td>187</td>
</tr>
<tr>
<td>by 2030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>16</td>
<td>N/A</td>
<td>445</td>
<td>N/A</td>
<td>462</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>32</td>
<td>0</td>
<td>N/A</td>
<td>60</td>
<td>92</td>
</tr>
<tr>
<td>Land Use</td>
<td>19</td>
<td>N/A</td>
<td>N/A</td>
<td>233</td>
<td>252</td>
</tr>
<tr>
<td>Fugitive Emissions</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>41</td>
<td>41</td>
</tr>
<tr>
<td>Transport</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Waste</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Power conservation</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TOTALS</td>
<td>67</td>
<td>0</td>
<td>445</td>
<td>349</td>
<td>861</td>
</tr>
</tbody>
</table>
Figure 13: Sources of viable emissions reductions by 2030 under combined tax-and-offset system

Whilst some of the emission reduction opportunities in the non-taxed sectors may be taken up through emission reduction projects, the government has a range of policy measures at its disposal to help further reduce emissions from these sectors. For example, education and awareness-raising around good agricultural practice and sustainable land use in the agriculture and land use sector; development and implementation of regulations covering fugitive emissions; introduction of emission standards for vehicles and scrappage programmes to take old and inefficient vehicles off the roads; and regulating packaging and recycling. All of these policies and measures can help to reduce emissions from un-taxed sectors alongside the opportunity to implement emission reduction projects.

3.4.2 Offset demand and supply

Demand for offsets will come from the energy generation sector, which is the main sector included in the High Tax Band (HTB). Figure 14 below shows the expected remaining emissions of the Power Generation sector after the switch to Low Carbon technologies that will be induced by the carbon tax (as shown by the MACTool model results).

Figure 14: Power generation emission and emission reductions

Emissions start at around 105 million t CO2e in 2014 and go down to around 80 million t CO2e in 2030 as the Power generation sector adopts mitigation activities. The Power Generation sector will have to pay carbon taxes
on these emissions. The emissions thus reflect the demand for emission reductions for use as offsets going forward.

The red area in the graph shows the envelope of the potential emission reduction supply from sectors other than the Power Generation sector. The red area represents the maximum emission reductions forthcoming over time if the price for emission reductions in each year from 2014 – 2030 tracks the carbon tax according to the High Tax Band.

The price for emission reductions is unlikely to ever be higher than the carbon tax because carbon tax payers would rather choose to pay the carbon tax instead of paying more than the tax to emission reduction suppliers. The maximum emission reduction supply price is thus represented by the High Tax Band schedule in Table 2.

Emission reduction supplies are a function of the emission reduction price. The potential emission reductions (see Figure 14 above) can only be achieved if the price paid per t CO2 is equal to or close to the carbon tax according to the High Tax Band. Figure 15 below shows for each year by how much demand for emission reductions exceeds supply if emission reductions trade at the carbon tax of the High Tax Band. As demand exceeds supply by at least 40 million t CO2 throughout 2014-2030, it can be assumed with some confidence that the Power Generation sector will bid up emission reductions prices to the range of the High Tax Band. This should happen all the more as at lower prices emission reduction supply will be even more limited than shown in Figure 14, resulting in an even larger demand overhang.

Figure 15: Demand overhang

Figure 16 below shows the total reductions potentially unlocked by a carbon tax. Emission reductions and Avoided Emissions in Power Generation add up to over 860 million t CO2 with more than 460 million t CO2 directly induced by the carbon tax.
It would be highly desirable for Ukraine to use the demand for emission reductions from the Power generation sector to unlock the emission reduction potential in other sectors. In that way the carbon tax could leverage emission reductions way beyond its Power generation and Manufacturing tax base.

3.5 USE OF REVENUE

Currently, proceeds from the Environmental Tax are credited to a special fund of the state budget, and to a special fund of local budgets in the proportions given in Table 4 below.

Table 4: Distribution of revenue from ET between special funds of budgets of different levels

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State Budget</td>
<td>30%</td>
<td>19.11</td>
<td>30%</td>
<td>19.02</td>
<td>53%</td>
<td>53.53</td>
<td>33%</td>
<td>45.36</td>
</tr>
<tr>
<td>Local Budget, including:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village, town and city budgets</td>
<td>70%</td>
<td>44.59</td>
<td>70%</td>
<td>44.38</td>
<td>47%</td>
<td>47.47</td>
<td>35%</td>
<td>47.53</td>
</tr>
<tr>
<td>Regional budgets and budget of Autonomous Republic of Crimea</td>
<td>50%</td>
<td></td>
<td>50%</td>
<td>33.50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget of Kyiv and Sevastopil</td>
<td>20%</td>
<td></td>
<td>20%</td>
<td>13.50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>63.7</td>
<td>63.4</td>
<td>101.0</td>
<td>135.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 16: Avoided emissions – Carbon Tax and Emission Reductions

Avoided Emissions Million t CO2

- Total Offset Supply all sectors - BE Carbon Price equal or lower than High Tax Band
- Emission Reductions Power Generation High Tax Band
Since 2013 a part of the funds received by the special fund of the state budget have been used to provide financial support to targeted ecological modernization projects within the amounts paid by them for environmental tax. 33% of revenue in 2013 and 39.4% from the total amount of environmental tax is allocated to a special fund of the state budget in 2014. The procedure of use of funds provided by the state budget to fund the development of targeted ecological modernization projects is approved by the Cabinet of Ministers and provides refund only for businesses within the amounts of ET paid by them.

Over the coming years, the efficient use of tax revenues will become even more important as the carbon price (GHG tax and then ETS allowance prices) increases over the coming years, and revenues collected increase significantly.

With the High Tax Band applied to Power generation and the Low Tax Band levied on Manufacturing, carbon tax revenues of about 33.8 billion USD can be expected from 2016 to 2030.

Figure 17: Carbon Tax paid without the use of emission reductions as offsets

Figure 18: Carbon tax paid with the use of emission reductions
If emission reductions are factored in, tax revenues could go down by up to 7.4 billion USD to a total of 26.4 billion USD for the 2016-2030 time horizon, but only if the full offset potential of about 406 million t CO2 is used.

From 2016 to 2030, entities in the lower tax band pay an estimated 11.4 billion USD in carbon taxes and can reduce their net payments to 9.9 USD billion through emission reduction sales receipts. Carbon tax payments by Power generation go down to about 15 billion USD but Power generation does not get significant relief from emission reduction trading, as the large demand overhang may not allow carbon prices to sink much below the High Tax band.

The orange area in Figure 19 below shows the potential size of the offset market with offsets priced according to the High Carbon Tax Band taxes. To what degree the potential emission reduction market of 7.4 billion USD materializes depends largely on Ukraine’s ability to create or agree robust MRV methodologies for the emission reduction projects in a timely manner.

![Carbon Tax paid - Potential Size Offset Market](image)

**Figure 19: Carbon Tax Paid – Potential size of the emission reduction market**

Without mitigating actions, carbon taxes in all sectors and especially the energy generation sector are typically passed on to end-consumers. In Ukraine, prices have traditionally been set centrally. However, with the signing of the Association Agreement with the EU, and in accordance with the terms of international loans provided to Ukraine, it is likely that market deregulation is around the corner. In the medium term, carbon taxes could be passed on as a result. Carbon taxes are regressive in nature meaning that they have a disproportional impact upon low income groups and selected industries.

Economy-wide modelling conducted by the Institute for Economic Forecasting of Ukraine for this project reveals that:

- Overall there is a small negative effect from raised carbon taxes on economic growth, however this effect becomes smaller over a longer timeframe. However it should also be noted that improved carbon taxation will lead to more efficient production and more competitive industry in the medium

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5 Also refer to New Law "On Basis of Functioning of the Electricity Market of Ukraine" (Current edition - April 20, 2014)
to long term, and the overall impact of an effective carbon tax on the economy may actually be positive - these positive impacts cannot be considered using existing models.

- Rather than using revenues as part of the state budget, redistributing revenues to industry and to the population would have the least negative effect on the long-term growth of the economy. Indeed, targeted properly, such an approach could be beneficial to lower income sections of the population.

Good uses for the revenue include:

- Recycling revenues back to the taxed sectors via either reductions in social or employment taxes or grants, or specifically for environmental projects
- Using revenues to support the consumer to whom taxes have been passed on, especially to low income groups. In the medium to long-term, revenue redistribution can be made even more targeted e.g. by subsidising housing energy efficiency programmes; or providing funding to climate change adaptation

### 3.6 TAKING GLOBAL WARMING POTENTIAL (GWP) OF DIFFERENT GREENHOUSE GASES INTO ACCOUNT

The three main greenhouse gases – CO2, CH4 and N2O, whose emissions cover 99.9% of total GHG emissions in Ukraine – are covered by the Environmental Tax.

Table 5: Thresholds and tax rates for GHG emission from Stationary Sources

<table>
<thead>
<tr>
<th>GHG Global Warming Potential (GWP)</th>
<th>Threshold for inclusion under ET (tonnes per year)</th>
<th>Threshold (t CO2e per year) considering GWP</th>
<th>2014 Tax rate (UAH/tonne)</th>
<th>2014 Tax rate (UAH/t CO2e) considering GWP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO2 (1)</td>
<td>500</td>
<td>500</td>
<td>0.26</td>
<td>0.26 (EUR 0.02)</td>
</tr>
<tr>
<td>CH4 (21)</td>
<td>10</td>
<td>210</td>
<td>87,81</td>
<td>3.86 (EUR 0.33)</td>
</tr>
<tr>
<td>N2O (310)</td>
<td>0.1</td>
<td>31</td>
<td>1553,79</td>
<td>4.63 (EUR 0.41)</td>
</tr>
</tbody>
</table>

The current charges detailed in Table 5 above are not directly related to the global warming potential of emissions of different GHGs or emissions of CO2 from different fuels. It is recommended that the calculation formula for taxation of emissions of the three GHGs (carbon dioxide, methane, nitrous oxide) is amended in the Tax Code of Ukraine to:

IPCC GWP(100)\(^{11}\) of GHG * mass of GHG released (tonnes) * tax rate UAH per tCO2e

This approach will mean that emissions can be reported in a common unit of tCO2e and the tax levied accordingly. It also means that the tax will be levied according to the latest scientific data on the climate change impact of the gases. The tax need not specify tax rates for particular gases and therefore if other sources of gases are to be added to the scope of the tax (HFC, PFCs, SF\(_6\) and NF\(_3\)), this can be done without needing to set a new tax rate. One single tax rate per tonne of CO2e can be set and adjusted periodically.

Further, it is recommended that in the Tax Code of Ukraine, the minimum total level of GHG emissions is expressed in tonnes of CO2 equivalent (tCO2e), above which facilities become subject to taxation. 25,000 t CO2e per annum

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\(^{11}\) http://unfccc.int/ghg_data/items/3825.php
is the proposed rate, with a threshold of 10,000 t CO2 per annum applied to the wood and manufacture of machinery and equipment sectors, on the basis that emitters between 10,000 and 25,000 tonnes per annum constitute more than 10% of the output of emitters over 25,000 tonner per annum. The purpose of this is to set a common standard in terms of GHG emissions and climate change impact, for liability under the tax. It should be clear that the threshold is applied to the cumulative total of all GHGs emitted.

3.7 TRANSITIONING TO A MIXED CARBON PRICING SYSTEM IN FUTURE WITH ETS, TAX AND OFFSET MECHANISMS ALL CO-EXISTING

The Ukrainian government is very seriously considering the development and implementation of a domestic emissions trading system in the years ahead. Preliminary design options have been considered for such an ETS, and it is likely that the installations which move out of tax and into ETS will be entities emitting over 25,000 tCO2e p.a. from the power, heat and manufacturing sectors in the first instance.

Under the proposed tax system, sectors deemed to be at risk of carbon leakage are proposed to be supported by inclusion under the low tax band and the possibility of developing and selling emission reductions. Under an ETS, such sectors are typically supported by a percentage of free allocations.

ETS entities and high tax entities will continue to be able to purchase domestic offsets, ensuring that emissions reductions are made at lowest cost to the economy.

A roadmap for this transition will be developed within Task 2 of the PETER project.

3.8 INTERACTION WITH OTHER POLICIES

A GHG emission tax can run in parallel with other policies and incentives encouraging investment in low carbon technologies, such as feed in tariffs for renewable energy and energy efficiency targets. However, care needs to be taken to ensure that there is no overlap of incentives - which can either cancel each other out, or lead to more incentivisation than required. For example, renewable power installations which benefit from a Feed-in-tariff should not be also allowed to sell emission reductions into the tax or future emissions trading systems.

Extra care will be needed when the ETS is implemented as ETS allowance prices can be extremely dependent upon the effects of other policies. For example, if the ETS auctions allowances without taking into consideration the impact of other policies, the price of allowances may fall due to a lower than expected demand. This in turn introduces volatility into the ETS and undermines participants' ability to make investment decisions.

3.9 CONSIDERATIONS ARISING FROM RECENT POLITICAL EVENTS

The full extent of the EU-Ukraine Association Agreement on the country’s Energy policy is yet to be seen. With the EU-Ukraine Association Agreement signed 27 March and 27 June 2014 and ratified 16th September 2014, the Ukrainian Government might revise a number of its energy and climate related policies. Thus, the Energy strategy up to 2030, adopted in 2013 will likely need a thorough revision to incorporate targets on renewable energy sources. In turn, this might lead to changes in the level of tax required to bring emissions to the commitment levels outlined above.

As a result of the ongoing unrest in the East of Ukraine, the state of industry and infrastructure is undergoing changes and there may yet be ramifications especially for coal mines, power plants and distribution infrastructure, industrial enterprises, and public and residential buildings. The design of an improved carbon tax will need to take
into account methodological issues on GHG accounting and reporting, power generation capacities distribution, and development of RES generation capacities resulting from recent developments relating to territorial control.

Further, a reshaping of the electricity market is imminent. Considerations from this include:

- Electricity market deregulation (market prices for all groups of users, potential need in Governmental intervention for low-income citizens)
- Potential feed-in tariff revision and tax incentives for renewable energy sources (tax exemption, preferential treatment, etc.)

Finally, energy efficiency measures and natural gas consumption cuts have been recently announced by the Prime Minister to promote energy security especially for the coming winter. Such measures may have a faster impact than otherwise on energy efficiency in the country.
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