

Review of funds expenditure obtained under the international emissions trading in Ukraine

Summary

The countries of Central and Eastern Europe and former Soviet Union have the largest greenhouse gas emission quotas surplus as a result of economic recession in the 1990s rather than due to systematic implementation of measures to reduce emissions. Such greenhouse gas emission quotas, acquired by the state without real climate protection efforts, are called "hot air".

In 2008, the actual level of GHG emissions in Ukraine was 420.6 million tons of CO₂-eq. - which is 46% of the allowed quota, set at the level of 1990 (100% = 934.1 million tons of CO₂-eq). Thus, the potential use of national GHG emission quotas surplus during 2008-2012 is estimated at 2 733 586 263 tons CO₂-eq.

From 2009 to 2012, the Government of Ukraine managed to sell 47 million assigned amount of units. Selling price was approx. 10 euro per unit of transferred GHG emission quotas, so the total amount of funds received by Ukraine through the mechanism of the Kyoto Protocol emissions trading was 470 million of euros.

To use funds received by Ukraine within the international emissions trading, the green investment scheme was established, with the National Environmental Investment Agency (NEIA, www.neia.gov.ua) appointed as the coordinating body. The legal framework of international emissions trading is established by a number of resolutions of the Cabinet of Ministers of Ukraine, and the basic provisions of the Green Investment Scheme are defined by the CMU Resolution No. 221 dated 22.02.2008, as amended.

Areas of projects implementation under the international emissions trading of Kyoto Protocol in Ukraine were approved by the buyer country in the relevant Green Investment Scheme Guidelines. Thus, the following categories of activities were selected for funding:

- Energy conservation,
- Fuel switching for low environmental burden,
- Utilization of Coal Bed Methane,
- Renewable energy,
- Activities for emissions reductions of greenhouse gases other than carbon dioxide (CO₂),
- Activities for environmental protection (e.g. pollution reduction activity).

In addition, 5% of resources are allocated to the "soft greening", i.e. capacity building for prompting of environmental activities.

Proposals for green investment scheme projects may be filed by enterprises and organizations and budget-funded institutions. At first projects proposed in the NEIA are checked for compliance with the criteria, then they are reviewed by the Interdepartmental Working Group at NEIA, approved projects agreed with the Party of the greenhouse gas emissions quotas buyer country, The Ministry of Ecology and Natural Resources, the Ministry of Finance and the Prime Minister of Ukraine.

As of December 2011, the National Environmental Investment Agency of Ukraine accepted 987 separate projects for consideration for implementation in the framework of a Green Investment

Scheme, of which the Ukrainian government finally approved the implementation of 363 energy saving projects, including thermal modernization of public buildings and mine waters treatment.

According to NEIA, Ukraine completed 37 projects green investment scheme by the end of 2011, which achieved an overall reduction of greenhouse gas emissions by 2 736.63 tons of CO_{2eq} per year. The cost of works for the project implementation amounted to UAH 38 086 997 (ca EUR 3.5 million), so specific cost of annual reduction of 1 ton of CO_{2-eq.} amounted to UAH 13 917, that is EUR 1 278. Planned activities for all 987 green investment scheme projects in Ukraine have the total emission reduction potential of 247 577.37 tons of CO_{2-eq} per year (0.069% of all CO₂ emissions in Ukraine of 2010) with the total cost of UAH 3 718 972 099 (almost EUR 340 mln). Thus, the average cost of 1 ton of annual reduction of CO_{2-eq.} emissions for all green investment scheme projects in Ukraine is UAH 15 021, or approx. EUR 1 373. However, a number of projects proposed for implementation under the green investment scheme are unreasonably expensive and with low efficiency of emission reduction.

The efficiency of the results of green investment scheme projects in Ukraine under current procedure is questionable by the disproportionately large cost with little cumulative target level of greenhouse gas emissions reduction. In addition, projects that can be implemented successfully within other flexible Kyoto Protocol mechanism – joint implementation – are also selected to be financed using funds received in Ukraine from the international emission trading under Kyoto Protocol. Such projects create competition for projects in the public sector. Accordingly, the principle of project selection as well as procedure transparency is questionable.

Non-transparency and bureaucratization in the implementation of international emissions trading mechanism under the Kyoto Protocol is a problem in Ukraine. Disclosure of information on projects implemented under the green investment scheme of the international emissions trading is not properly adjusted, resulting in difficulty to evaluate their quality and efficiency, or even the possibility of corruption signs. In turn, it is still possible that the green investment scheme projects can be implemented in Ukraine for political reasons, and thus obstruct from selection of economically and environmentally viable ones.

Introduction

Understanding the global nature of climate change and realizing the importance of joint action to address the issue international community began negotiations on the adoption of an international treaty on climate change in February 1991. UN Framework Convention on Climate Change (UNFCCC) was officially adopted in 1992 on "Earth Summit" in Rio de Janeiro, and it entered into force on March 21, 1994. But the Convention is of a framework character and contains no quantitative commitments. Therefore, in 1997 the Kyoto Protocol was adopted, which established quantitative greenhouse gas emissions reduction or limiting commitments for developed countries and with economies in transition. Thus, in the aggregate under the Protocol all Annex B countries must reduce greenhouse gas emissions by 5% of emissions level in 1990 during 2008-2012. The commitments are calculated by setting quotas on the number of emissions units (assigned amount units) for each country separately.

Under the Kyoto Protocol, the Parties may carry out their commitments by implementing measures to reduce greenhouse gas emissions in their countries, additionally implementing projects and buying quotas from other countries through the so-called Kyoto Protocol "flexible mechanisms": Clean Development Mechanism (CDM), Joint Implementation projects (JI), Emissions Trading.

Ukraine became a Party to the UNFCCC as Annex 1 country with the status of economy in transition, and having ratified the Kyoto Protocol as Annex B country. In the first period of the Kyoto Protocol in 2008-2012, Ukraine undertook not to exceed the level of greenhouse gas emissions of 1990, or 0% of their reduction. But in 2008 the actual level of emissions consisted only 46% of the allowed quota, i.e. by 54% less as compared to 1990.

General principles of international greenhouse gas emissions trading

The largest surplus of greenhouse gas emission quotas have the countries of Central and Eastern Europe and the former Soviet Union, as a result of economic recession in the 1990s rather than due to systematic implementation of emissions reduction policies. Such greenhouse gas emission quotas, acquired by the state without real climate protection efforts, are called "hot air". "Hot air" carries risks for the fulfilment of Kyoto Protocol and the "carbon market" commitments, therefore this surplus must be intact. As a result, to ensure the legitimacy of international trade mechanism under Kyoto Protocol it is permitted to use emission allowances that have been reached by real efforts and to reinvest funds with a positive environmental effect.¹ Consequently, such activities under the emissions trading should be directed in accordance with the basic goals and objectives of the UNFCCC, particularly on the direct reduction of greenhouse gas emissions and creation of favourable conditions for this.

Under the Kyoto Protocol, there are no formal rules or procedures governing the Green Investment Scheme (GIS), although some general principles and approaches have been developed. It was in The Hague at the Conference of the Parties in 2000 that Russia suggested, and later in Marrakech (2001) and Bulgaria (2004) the principle of using funds from the sale of assigned amount units (AAUs) of GHG emissions within international trading with a positive effect on the environment was considered. As a result, Hungary and Latvia were the first that made the first transactions on greenhouse gas emissions trading under green investment scheme.

¹ Report of Point Carbon for CAN Europe - Assigned Amount Unit: Seller/buyer analysis and impact on post-2012 climate regime, 2009.

Transactions on emissions trading in Ukraine

Ukraine, having signed the UNFCCC and the Kyoto Protocol, has undertaken not only certain commitments, but got an opportunity to attract additional funds for measures to reduce greenhouse gas emissions through implementation of international emissions trading and joint implementation projects. According to preliminary estimates predicted surplus of national greenhouse gas emissions quotas for 2008-2012 is 2 733 586 263 tons of CO₂-eq, excluding required reserve of 1 870 598 400 tons², according to international requirements.

Since 2008, Ukraine operates the Green Investment Scheme, which regulates the participation in international emissions trading under Kyoto Protocol and the mechanism of using the acquired funds. Since 2009, Ukraine has made sales of quotas for greenhouse gas emissions 47 million assigned amount units (AAUs) totally³: 30 million AAUs to Japan, 3 million AAUs to Spain, and additionally 14 million AAUs to Japan in 2010. Selling price was about 10 euros per unit of transferred greenhouse gas emissions allowances, so the total amount of funds received by Ukraine under the Kyoto Protocol emissions trading mechanism is approx. EUR 470 mln. Proceeds from the sale of AAUs by Ukraine were sent to the national budget and placed in special accounts of the State Treasury. The funds are used under the current Budget Code of Ukraine.

Legal aspects of Ukraine concerning the international greenhouse gas emissions trading

The international greenhouse gas emissions trading mechanism is determined by Article 17 of the Kyoto Protocol to the UN Framework Convention on Climate Change, performance of which in Ukraine is vested by the law:

- UN Framework Convention on Climate Change adopted on May 9, 1992 and ratified by the Law of Ukraine No.435/96 on 29.10.1996
- Kyoto Protocol to the UNFCCC adopted on 11.12.1997, ratified by the Law of Ukraine No. 1430-IV (1430-15) on 04.02.2004

In Ukraine assigned amount units trading under Art. 17 of the Kyoto Protocol is performed based on the International Agreement between the buyer and seller. The legal framework of Green Investment Scheme in Ukraine is established by a number of governmental resolutions:

- Resolution of the Cabinet of Ministers of Ukraine No. 221 on 22.02.2008 "On Validation of Procedure for Review, Approval and Implementation of Purposeful Environmental (Green) Investments and Proposals on Activities related to the Implementation of such Projects and Commitments of the Parties to the Kyoto Protocol to UN Framework Convention on Climate Change" (as amended);
- Resolution of the Cabinet of Ministers of Ukraine No. 392 on 17.04.2008 "On Performance of Ukraine's international commitments under the UN Framework Convention on Climate Change and the Kyoto Protocol thereto";
- Resolution of the Cabinet of Ministers of Ukraine No. 348 on 03.23.2011 "On Approval of Procedure for Use of Funds provided for by the State Budget for Implementation of Measures to Reduce GHG Emissions (Increasing of Absorption)"

Most countries implementing GIS have adopted target laws that describe the scheme, establish the liability of public authorities, indicating the "greening" procedure, managing funds, etc.

² <http://www.carbonunitsregistry.gov.ua/ua/264.htm> as of January 1, 2012

³ <http://www.carbonunitsregistry.gov.ua/ua/278.htm> as of January 1, 2012

Areas of Green Investment Scheme in Ukraine

Usually the types of measures for investment of funds received from the international emissions trading under Kyoto Protocol are chosen according to the priorities of the country and its potential for further emissions reduction. Areas of projects under the Kyoto Protocol international emissions trading in Ukraine were approved by the buyer countries in the relevant Green Investment Scheme Guidelines. Ukraine has been chosen for funding the following categories of environmental activities:

- Energy conservation,
- Fuel switching for low environmental burden,
- Utilization of Coal Bed Methane,
- Renewable energy,
- Activities for emissions reductions of greenhouse gases other than carbon dioxide (CO₂),
- Activities for environmental protection (e.g. pollution reduction activity).

In addition, 5% of resources are allocated to the "soft greening", i.e. capacity building for prompting of environmental activities.

Eastern European countries that are members of the European Union (Hungary, Latvia, Czech Republic, Lithuania, Romania, Estonia) have chosen projects for energy efficiency of budget-funded and residential buildings⁴, where there is a great potential for reducing greenhouse gas emissions and implementation of low-power renewable sources, as a priority of GIS projects.

Procedure of green investment scheme projects implementation in Ukraine

The National Environmental Investment Agency (NEIA, www.neia.gov.ua) was appointed as the coordinating body. The procedure and criteria for selecting of green investment scheme projects are established by the Resolution of Cabinet of Ministers No. 221 on 22.02.2008.

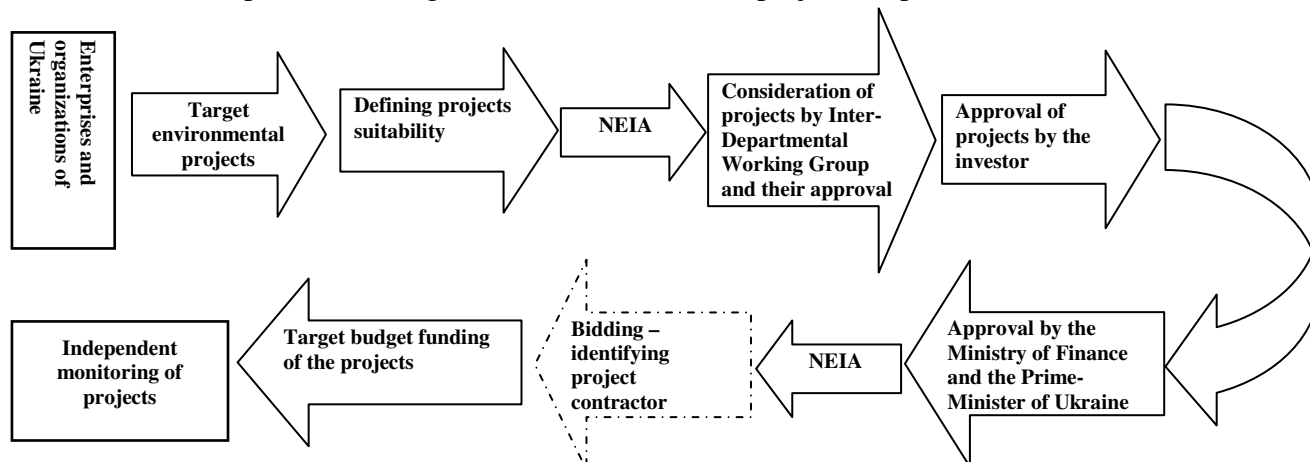
NEIA carries out preliminary selection of projects and proposals received from applicants. If the projects fail meet the general criteria and/or documents submitted are incomplete, they are returned to the applicant. Instead, there are no criteria to evaluate the projects efficiency. In case of pre-selection, National Environmental Investment Agency submits projects and proposals to standing Inter-Departmental Working Group established by it for consideration. Inter-Departmental Working Group at NEIA considers the documents submitted by the applicant and analyzes and evaluates of project, financial conditions of its implementation. As a result of such consideration Inter-Departmental Working Group shall submit to NEIA recommendations for approval or denial of the project. Based on the recommendations and with National Environmental Investment Agency approval projects are agreed with the Party to the Treaty for the sale of assigned amount units. From among the projects that have been endorsed Inter-Departmental Working Group, in coordination with the Ministry of Ecology and Natural Resources of Ukraine and Ministry of Finance of Ukraine, approves the action plan for implementation of measures to be submitted for approval by the Prime Minister of Ukraine.

On information of NEIA, projects approval under GIS passes in prolong negotiations with Japan Party. Under the agreed arrangements approval of large-scale projects for implementation was the key to approve implementation of social value projects.

⁴ Andreas Tuerk, Dorian Frieden, Maria Sharmina, Helmut Schreiber, Diana Urge-Vorsatz - Working Paper Green Investment Schemes: First experiences and lessons learned, 2010.

To implement the selected projects using state funds under green investment scheme, NEIA carries out bidding⁵, as a result of which the contractor is defined in due course under the current legislation.

Classical procedure for green investment scheme projects implementation in Ukraine:



Thus, a number of different executive bodies and greenhouse gas emissions allowances buying parties are involved in the selection process and management of financial resources of green investment scheme projects, making the process too bureaucratic. At the same time through the legislative peculiarities of procedure for the allocation of funds from the state budget and state bidding among contractors project implementation slows down.

Progress of green investments scheme projects in Ukraine

By the third quarter of 2010 was not selected any project to be implemented on green investment scheme in Ukraine, although the resolution of the CMU on 16 September 2009 No. 1036 "On Approval of Plan for the Preparation and Implementation of Green Investment Scheme Projects Aimed at Reducing GHG Emissions in the Educational and Health Care Facilities". The press repeatedly referred to different types of projects for funding from the funds received from international emissions trading - re-equipping of heating systems, emissions reduction in gas transmission system of the country, financing the construction of hydro-pump storage power plants, modernization of subway trains and fleet for the Ministry of Internal Affairs, reconstruction or construction of waste incineration plant etc.

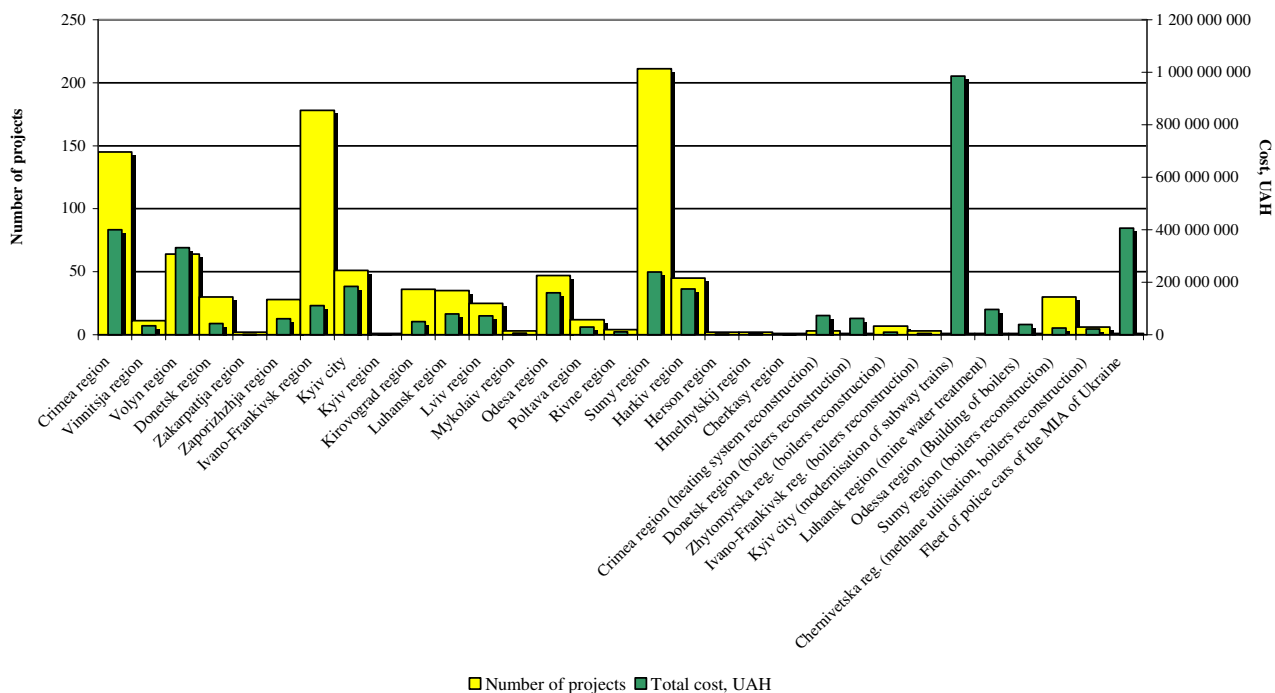
Officially, as of December 2011, the National Environmental Investment Agency of Ukraine selected 987 separate Green Investment Scheme projects⁶ for consideration, including, for example, recommended reconstruction of Kyiv subway trains, collection and utilization of methane in solid waste landfill, replacement of the fleet of existing police cars of the Ministry of Internal Affairs of Ukraine. However, finally, by the end of 2011, the Ukrainian government had approved the implementation of 363 projects on energy efficiency (including thermal modernization of buildings) and the use of alternative energy sources, particularly in the district heating. Thus, Ukraine chose project approach ensuring selection and implementation of individual projects to implement the green investment scheme.

⁵ In accordance with the Law of Ukraine "On Public Procurement", <http://zakon2.rada.gov.ua/laws/show/2289-17/page>. Since June 2012, Green Investment Schemes shall be exempt from the bidding procedure under amendments to the law.

⁶ In accordance with the list target environmental (green) investments that are under consideration and approved by National Environmental Investment Agency (as of 20.12.2011), http://www.neia.gov.ua/nature/control/uk/publish/article?art_id=133668&cat_id=124591 List is not final and may be supplemented.

The funding and number of projects under the green investment scheme in Ukraine are distributed evenly in 22 regions and in Kyiv, which can be analyzed in Chart 1.

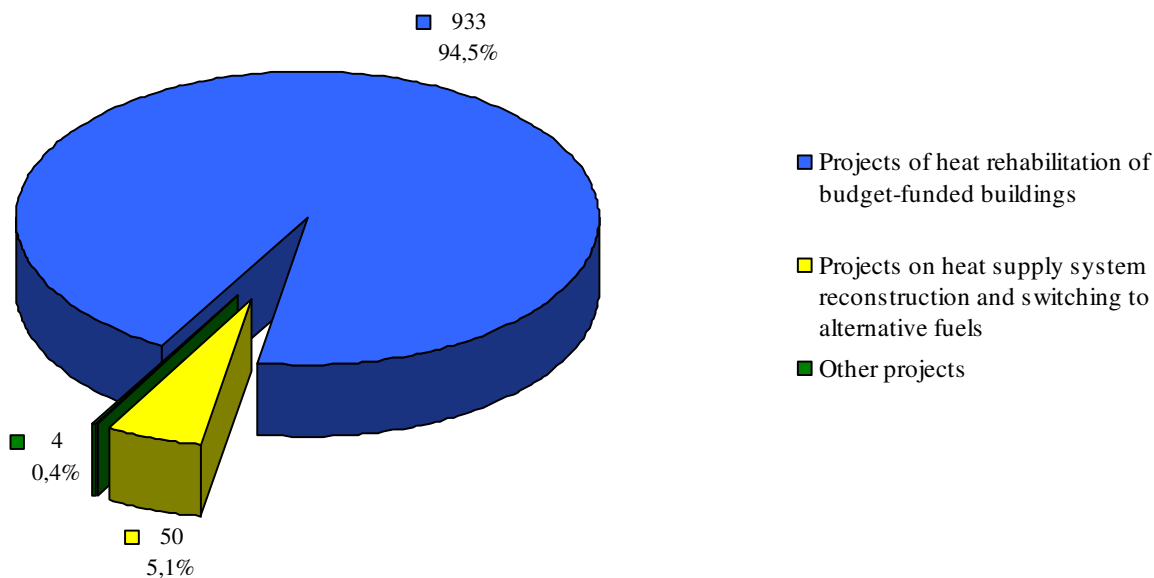
Chart 1:
Geographical distribution of green investment scheme projects in Ukraine



Conventionally, measures for implementation of green investment scheme projects in Ukraine can be divided into the following categories:

1. thermal rehabilitation of buildings (replacement of windows, doors, facade insulation),
2. construction and reconstruction of heat supply systems to ensure higher efficiency and use alternative fuels,
3. other projects: mine water treatment and reconstruction of underground rolling stock, utilization of methane in solid waste landfill, the replacement of fleet of police cars of the Ministry of Internal Affairs of Ukraine.

Chart 2:
Proposed green investment scheme projects by categories



As of December 20, 2011, according to NEIA, Ukraine finally completed 37 green investment scheme projects. It is planned that the measures implemented in the projects will reach greenhouse gas emissions reductions at 2736.63 tons of CO_{2-eq.} a year. The cost of such works was UAH 38 086 997 (ca EUR 3.5 million), thus the cost of annual reduction of 1 ton of CO_{2-eq.} was UAH 13 917, i.e. EUR 1,278.

Economic and environmental efficiency of green investment scheme projects in Ukraine

The environmental effects and economic costs of green investment scheme projects implementation in Ukraine are evaluated based on information about the projects that were proposed by NEIA. Analysis is conducted for the measures of thermal rehabilitation, reconstruction and construction of boiler houses and heating systems as well as other GIS projects specified in the list as being under consideration in NEIA. It is difficult to objectively evaluate the efficiency of projects indicated in such list since there is no information on the technical characteristics of buildings (heated area, the current energy consumption rate, etc.) and volume of works. It should be noted that the potential for greenhouse gas emissions reduction resulting from the implementation of green investment scheme projects in Ukraine will have long-term effect. It is assumed that the service life of the implemented projects will be 15 years (similar to the Czech Republic), results for the year are taken into account in calculations.

Expected activities under 987 green investment scheme projects in Ukraine have total emission reduction potential of 247 577.37 tons of CO_{2-eq.} per year (0.069% of all CO₂ emissions in Ukraine in 2010) with the total value of UAH 3 718 972 099 (almost EUR 340 millions). Thus, the average capital investments per 1 ton of annual reduction of CO_{2-eq.} emissions for all green investment scheme projects in Ukraine is UAH 15 021, or ca EUR 1 373.

Comparison of prices and volume of greenhouse gas emissions reduction, depending on the type of green investment scheme projects planned is shown in Charts 3-5.

Chart 3: Expected greenhouse gas emissions reduction in proposed green investment scheme projects in Ukraine by categories, CO_{2-eq.}/year
Chart 4: Cost of proposed green investment scheme projects in Ukraine by categories, UAH.

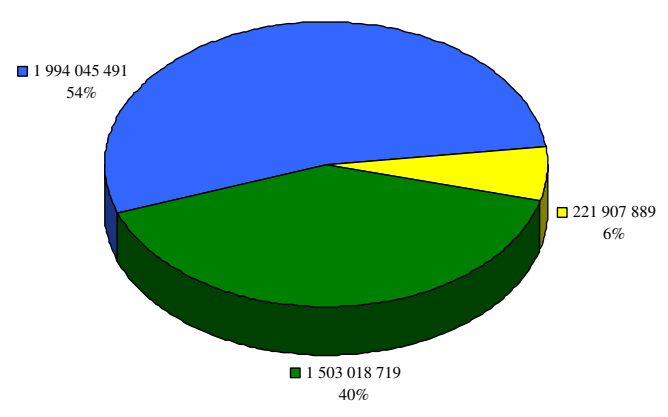
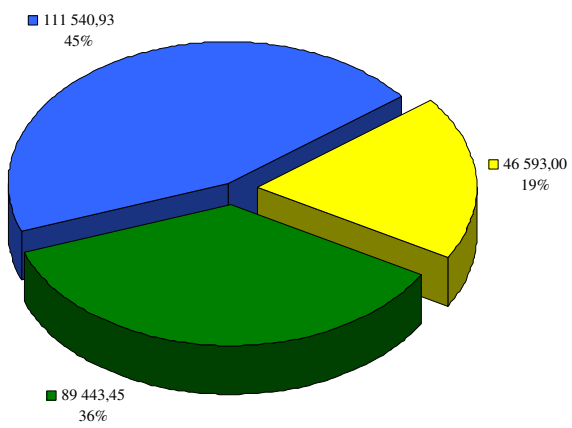
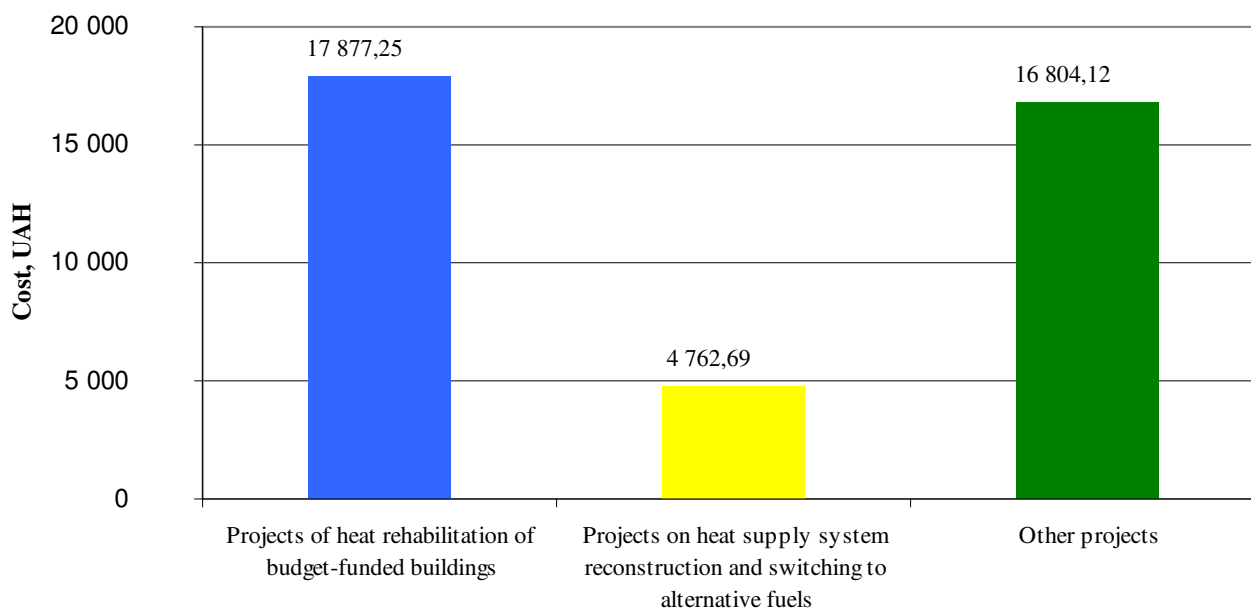


Chart 5: Average cost of 1 ton CO₂-eq. emission reduction



Distribution cost of greenhouse gas emissions reduction in green investment scheme projects in Ukraine is disproportionate in relation to the planned reduction volumes and differs from one region of Ukraine to another.

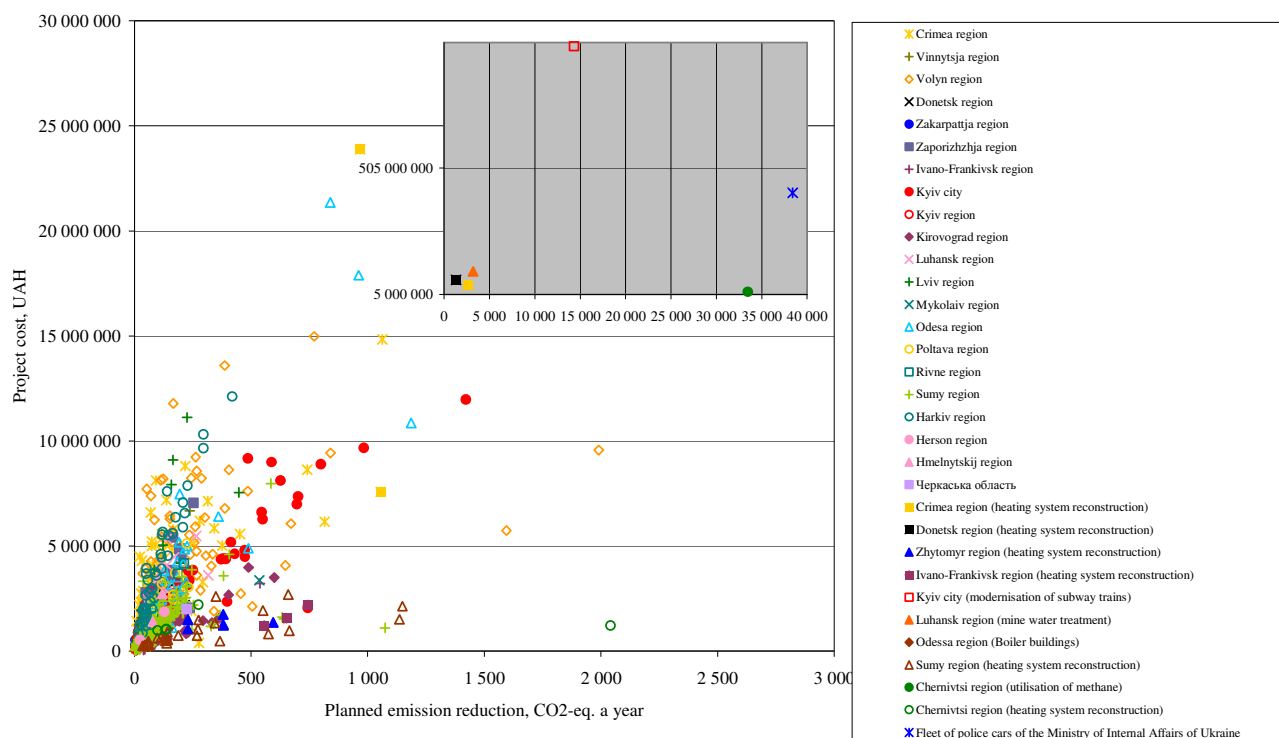
Data shown in Diagram 6 show considerable cost differences and planned greenhouse gas emissions reductions of similar projects on thermal rehabilitation of social infrastructure facilities. Thermal rehabilitation projects mainly in Poltava, Ivano-Frankivsk, Kirovohrad regions may result for the year in 1000 tonnes of CO₂-eq. reductions with the projects cost within UAH 5.0 mln. (up to EUR 455 thous.), while the similar projects with environmental effects in the Crimea, Volyn, Sumy, Odesa, Kharkiv regions and in Kyiv cost UAH 122.0 thousand (ca EUR 11.0 thousand) to UAH10.0 mln. (EUR 909.0 thousand), and in some projects ca UAH 20 mln. (EUR 1.8 mln.). Among the green investment scheme projects on reconstruction and thermal rehabilitation in Ukraine, the average cost of 1 ton of reduction of CO₂-eq. emissions per year is UAH 17 848.54 (ca EUR 1 622).

Construction or reconstruction projects of boiler house and heating system (most of which are located at the facilities of social significance) mainly cost UAH 250 thousand (EUR 22.7 thousand) to UAH 3.0 mln. (up to EUR 273.0 thousands) with the amount of emission reductions 34.32–1 148.72 tons of CO₂-eq. per year. However, funding and emissions reduction volumes of some projects differ greatly relative to the other: measures at municipal boiler house "Illichivsk teploenergo" in Odesa costs UAH 39 226 018 (EUR 3,566 million) with the reduction level of 25 239.55 tons of CO₂-eq.. The average value of 1 ton of CO₂-eq reduction per year in the projects on construction or rehabilitation of boiler houses and heating system is UAH 4 762.69 (ca EUR 433.0). According to the authors of the publication "Potential and Energy Efficiency in Public Area by the example of Manevychi District of Volyn Region" (*Ecoclub, Rivne-2011*), the cost of boiler replacement was UAH 50-108 thousand (EUR 4,545 – 9,818) with similar amounts of greenhouse gas emissions, thus cost of reduction of 1 tone of CO₂-eq. per year in these projects amounted to UAH 487-1984 (EUR44.30 to 180.40).

Apart from projects on energy efficiency of budget-funded buildings and reconstruction of heat supply systems, other green investment scheme projects are considered for implementation in Ukraine, namely the collection and utilization of methane in Chernivtsi solid waste landfill, modernization of railway trains at ME "Kyiv Metro", mine water treatment in the mine named after P.L. Voikov, replacement of existing police cars of the Ministry of Internal Affairs of Ukraine with hybrid engine vehicles. Project on water treatment provides additional environmental benefits in addition of reducing

greenhouse gas emissions, namely reduction of contaminated water discharges from 6 340 thousand m³ per year before the project implementation up to 1 450 thousand m³ per year after the project implementation, and gross discharge of salts will decrease from 10 800 t/year to 3 325 t/year. At the same time, methane disposition projects at solid waste landfills in Ukraine are successfully implemented without state support with the commercial effect under other Kyoto Protocol mechanism - Joint Implementation. In general, the other green investment projects in Ukraine, apart from energy efficiency at budget-funded buildings and reconstruction of heat supply systems cost UAH 1503018719 (EUR 136 638 065) and the planned reduction level of 89 443.45 tons of CO₂-eq. Thus, the average cost of 1 ton of CO₂-eq reduction per year of four other individual GIS projects is UAH 16804.12 (up to EUR 1 528).

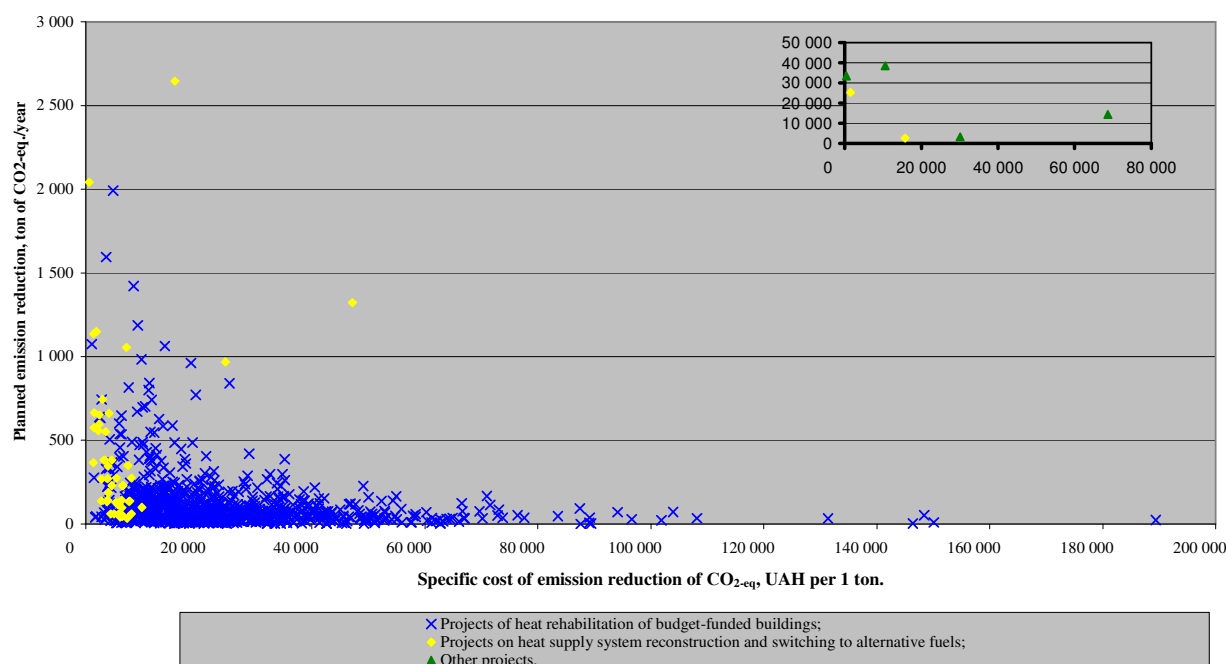
Chart 6:
Distribution of reduction cost of CO₂ emission in green investment scheme projects of Ukraine



To assess the cost-effectiveness of projects on thermal rehabilitation of buildings special construction companies provided information that the average cost of full comprehensive thermal modernization of the buildings (facade insulation, piping, roofs, basements, replacement of windows and doors, etc.) in Ukraine is UAH 700-1500 per m² (EUR 64-136). The first implemented green investment scheme project was the clinical hospital for the disabled persons and veterans in Simferopol. The measures provided for the renovation, facade insulation at estimated total area of 4 592.7 m² and replacement of windows and doors with the total area of 404.5 m². Therefore, the projects similar to the first completed green investment scheme project may have estimated cost from UAH 3.5 million. (EUR 318.2 thousands).

Volume of greenhouse gas reduction in the implementation of planned green investment scheme projects in Ukraine is very irregularly correlated to specific cost of greenhouse gas emissions reduction. Specific capital investment of emissions reductions in most green investment scheme projects in Ukraine are up to UAH 40 000 (ca EUR 3 600) with the expected reduction volume of up to 250 tons of CO₂-eq. Some of the green investment scheme projects proposed for implementation are unreasonably expensive with low efficiency of emissions reduction.

Chart 7:
Correlatio of greenhouse gas emission reductions in the cost of green investment scheme projects in Ukraine



Financing of projects on thermal rehabilitation of buildings and reconstruction of local heating supply systems has considerable potential for greenhouse gas emissions reduction with additional economic and social benefits as their implementation under the green investment scheme is feasible. However, the disproportionately large financial investments with a small total target reduction level of greenhouse gas emissions put into question the efficiency of green investment scheme results under the current procedure in Ukraine. The current procedure of green investment scheme in Ukraine allows support of projects in the sectors that actively involve financing under joint implementation, such as methane disposition from solid waste landfills. For projects of a number of economic sectors, joint implementation (JI) mechanism is an effective incentive for the reduction of greenhouse gas emissions, and it is unreasonable to create competition between the two ongoing flexible Kyoto Protocol mechanisms.

Transparency of decision making and implementation of green investment scheme in Ukraine

Since its creation the green investment scheme in Ukraine lacked transparency and public involvement in decision making. Disclosure of information on the projects implementing under the Kyoto Protocol international emissions trading wasn't full. The process of fund management, project selection as well as supervision and control within international emissions trading under Kyoto Protocol was non-transparent and bureaucratized.

Information disclosed by NEIA on green investment scheme projects in Ukraine includes: project name and address of institution where it will be implemented, information about the applicant, cost and the planned greenhouse gas emissions reduction. It is difficult to objectively evaluate the efficiency of projects indicated in such list, because there is no information on the technical characteristics of buildings (heated area, the current energy consumption rate, etc.) and volume of works.

Non-transparency and bureaucratization in the implementation of international emissions trading mechanism under the Kyoto Protocol is a problem in Ukraine. Disclosure of information on projects implemented under the green investment scheme in the international emissions trading is not properly adjusted, resulting in difficulty to evaluate their quality and efficiency, or even the possibility of corruption signs. In turn, it is still possible a chance that the green investment scheme projects can be implemented in Ukraine with political reflection, and thus preclude from selection of economically and environmentally viable ones.

Verification of green investment scheme results in Ukraine

Possibility to monitor and verify the implemented green investment scheme projects in Ukraine is established by the buying countries in the assigned amount unit sale contract and the Resolution of the CMU No. 221 on 22.02.2008. NEIA shall annually carry out financial and technical audit of green investment scheme projects and to report to Parties to assigned amount unit sale contract under the Kyoto Protocol. GIS audit may be carried out by a major international company with representation offices in Germany, Japan and Ukraine.

Comparison of the results of the green investment scheme activities

Green investment scheme activities in different states are organized differently, but with some common elements. Generalized comparison of green investment scheme architecture in Ukraine and other East European EU Member States is presented in Table of Appendix 1.

The most complete information is available about the GIS results in the Czech Republic, where the program of subsidizing energy efficiency measures, introduction of renewable energy sources for heating in residential private, apartment and municipal buildings, as well as support to the construction of passive houses, was established. The estimation shows that the cost of 1 ton of CO₂-eq. emission reduction under green investment scheme in the Czech Republic for the state was ca EUR 658-873. As a result of the GIS implementation in the Czech Republic, it is expected to achieve the following results by 2012:

- Reduction of CO₂ emissions by 1.1 million tons per year, which is 1% of total emissions of the Czech Republic;
- Saving 6.3 PJ of energy in heating systems, which means saving billions of CZK by households;
- Improving housing conditions for 250,000 families who receive support;
- Increased heat from renewable energy sources by 3.7 PJ;
- Reduction of dust pollution by 2.2 million kg;
- Creating or retention of 30 000 jobs, some more 19 059 new jobs were created in 2010.

The experience of East European countries that use the Kyoto Protocol mechanisms under alternative green investment scheme demonstrates a significant positive contribution to the creation of new jobs and local economy development. There is no information about the impact of emissions trading mechanisms on employment in Ukraine as legal entities and individuals are allowed to perform design works through selection in bidding.

The green investment scheme implementation in Ukraine is financed using state budget funds, and there is no information about additional investments in projects. Instead, the Czech Republic additionally attracted EUR 1.92 billion of investments as co-financing of green investment projects.

Conclusions

Ukraine, having signed the UNFCCC and the Kyoto Protocol, has undertaken not only certain commitments, but got an opportunity to attract additional funds for measures of reducing greenhouse gas emissions through the implementation of international emissions trading and joint implementation projects. During 2008-2012, Ukraine sold 47 millions of assigned amount units under the international emissions trading mechanism. The total amount of contracts with Japan and Spain is EUR 470.0 mln.

The legal framework of the use of funds received by Ukraine under the international emissions trading is regulated by a number of resolutions of the Cabinet of Ministers of Ukraine and is implemented under the green investment scheme, whose activities are coordinated by the National Environmental Investment Agency.

- *Low level of greenhouse gas emissions reduction along with disproportionately large financial investments put into question the efficiency of green investment scheme implementation under the current procedure in Ukraine.*

With the implementation of selected green investment scheme projects in Ukraine it is expected to reach annual reductions by 247 577.37 tons of CO₂-eq., which is only 0.069% of all CO₂ emissions in the state of 2010. By 2012 UAH 3 718 972 099 (ca EUR 341.0 mln.) are allocated for implementation of activities under green investment scheme projects in Ukraine.

- *Green investment scheme projects selected for funding under green investment scheme in Ukraine are properly focused on energy saving.*

Implementation of energy efficiency projects in public sector buildings and municipal boiler houses and heating systems is reasonable under green investment scheme. After all, housing and utilities and municipal buildings focused considerable potential for reducing energy consumption and emissions.

- *As a result of excessively bureaucratized selection process, individual projects are implemented without national systemic approach, it prevents from implementation of a comprehensive energy efficiency policy.*

To be implemented under the green investment scheme in Ukraine, projects are selected by various executive bodies with further consultation with the Party of the country buying assigned amount units. The procedure for funding projects from the state budget is difficult and slow. Absence of comprehensive mechanism that creates an incentive to implement energy efficiency and use of renewable energy sources by final consumers in residential sector and in the public buildings precludes from achieving significant reductions of greenhouse gas emissions and from using in full the existing energy efficiency potential.

- *Implementation of international emissions trading mechanism under the Kyoto Protocol is non-transparent in Ukraine.*

Disclosure of information on green investment scheme projects under the international emissions trading is not properly organized, causing difficulties in assessing their quality, efficiency or even the possibility of corruption signs.

Recommendations

The Government of Ukraine should pay attention to the efficiency of the projects and work to improve procedures for the use of funds received from international emissions trading under the Kyoto Protocol. Based on the results of the implementation analysis from 2009 to 2012 in Ukraine, it is recommended:

- To focus green investment scheme projects implementation on budget-funded institutions of social significance and housing sector, with the ability to involve private households. However, in implementation of projects in the private housing stock of the country it is necessary to provide co-financing condition.
- Introduce a single mechanism for implementing a green investment scheme with aim to reduce greenhouse gas emissions through energy saving measures and increasing use of renewable energy.
- Improve the transparency of submission and selection of projects prior to funding under the green investments scheme. It is necessary to establish clear criteria for project efficiency. The process of projects selection to be implemented under the green investment scheme must be impartial and in the short term, subject to compliance with the green investment scheme criteria.
- Consider the possibility of applying practices of green investment scheme implemented in Eastern Europe, as the current Ukraine's procedure of use of funds received from international emissions trading under the Kyoto Protocol is inefficient.

Appendix 1

Comparison of Green Investment Scheme in some countries of Eastern Europe⁴

	Ukraine	Latvia	Poland	Czech Republic	Hungary
<i>Budgetary option:</i>	Money enters a special account within the national budget.	Money enters budgetary account in state treasury, then disbursed to CCFI.	Money enters a special account under National Fund for Environmental Protection and Water Management (NFEP&WM).	Money enters a special account under MOE, not entering the state budget.	Money goes directly to the special account at Ministry of Environment and Water.
<i>Type of Greening:</i>	Hard + soft	Hard + soft.	Hard + soft.	Hard.	Hard.
<i>Priority areas:</i>	Energy efficiency in public sector buildings, switching of fuel to other low-carbon types, utilization of coal bed methane, reduction activities of others than CO ₂ and 5% of resources for capacity building of environmental activities.	Energy efficiency, fuel switch and increased use of renewables, technologies reducing GHG emissions.	Energy efficiency such as in buildings, clean coal technologies, fuel switch, research and development, capacity building on climate change and industrial processes.	Energy efficiency and use of renewable energy sources (biomass) in buildings. Other sectors still limited since various support programmes exist.	Energy efficiency in the residential sector, renewable energy for heating, public transport, replacement of household appliances.
<i>Coverage of project costs:</i>	Grant coverage of the project.	Less than 100% coverage. For the first tender high intensity of support (85%).	Necessity of co-financing of the projects.	Average ~30-50% are financed by AAU revenues. The amount of support depends on achieved energy consumption reduction.	Basic grants; bonus based on attained energy efficiency level (labeling system); less than 100% coverage.
<i>Policy or program approach vs. project approach:</i>	Project approach: Stand-alone project, with a clear-cut project boundary.	Project + programmatic approach: Implementation of stand-alone projects and greening activities with discrete nature, dispersed but in great aggregate number.	Project + programmatic approach: Implementation of stand-alone projects and greening activities with discrete nature, dispersed but in great aggregate number.	Programmatic approach: Greening activities with discrete nature, dispersed but in great aggregate number.	Project + programmatic approach: Implementation of stand-alone projects and greening activities with discrete nature, dispersed but in great aggregate number.
<i>Project selection process:</i>	National priority area,	Open application	Open application	Open application	Open application

	depends on government decision, through regional or sectoral distribution.	procedure where additionality and emission reduction potential decide priorities.	procedure where additionality and emission reduction potential decide priorities.	procedure where additionality and emission reduction potential decide priorities.	procedure where additionality and emission reduction potential decide priorities.
<i>Monitoring and verification:</i>	<ul style="list-style-type: none"> ▪ Possible participation of AAUs Buyer Party in the review, monitoring and verification of the projects. ▪ Financial and technical audit by independent verifier. 	<p>Two annual financial reports:</p> <p>1) tender report;</p> <p>2) progress report.</p> <p>International auditing by a recognized auditor.</p> <p>Numerous quarterly internal audits by the Internal Audit Department.</p>	<p>National Fund for Environmental Protection and Water Management responsible for verifying beneficiaries' semi-annual reports on AAU money disbursement as well as for reporting yearly to the Ministry of Environment.</p>	<p>Monitoring Committee consists of the Ministry representatives who meet quarterly. International auditor to monitor financial flows as agreed with the buyer. At least 5% of the projects should be checked on-site</p>	<p>Financial audit, reported by the MOEW in the format of a report according to ISO 14064 standard; monitoring by advisory board ; annual reports including the achieved emission reductions.</p>

Appendix 2

Comparison of Green Investment Scheme efficiency in Ukraine and Czech Republic

	<i>AAUs sold, price:</i>	<i>Total funds:</i>	<i>Project implementation scheme:</i>	<i>Attracting investment to co-finance:</i>	<i>Number of projects:</i>	<i>Emission reduction:</i>	<i>Job opportunities:</i>
Ukraine, 2008 – present:	47 mln. AAUs in 10 euros per unit.	470 mln. euros.	Financing of the projects selected by categories: energy conservation, fuel switching to other types with less carbon impact, mine methane utilization, renewable energy, measures reducing emissions of greenhouse gases other than CO ₂ , environmental protection measures (such as pollution reduction) and promotion of the above measures.	To implement energy saving projects in public sector buildings is planned to allocate 100 million euros. Also planned implementation of other projects of energy saving in industrial and municipal facilities. Ability to co-financing is foreseen.	Submitted 987 projects, finished 37 of them on November 1 st 2011.	Totally planned emission reduction of 247 577,16 tones CO ₂ eq. a year (0,069% of national CO ₂ emissions in Ukraine);	Information not available ⁷
Czech Republic, 2009 – сьогодні:	87,5 mln. AAUs in 9,5 euros per unit.	960 mln. euros.	The Green Savings programme focuses on support for heating installations utilising renewable energy sources but also investment in energy savings in reconstructions and new buildings..	With co-financing of 40-60% of the project cost involved additionally 1,92 bln. euros.	Implemented approx. 19000 projects in households of 250 000 families; on revision 22 000 applications.	<ul style="list-style-type: none"> ▪ A reduction in CO2 emissions of 1.1 million tons, which is 1% of all Czech emissions; ▪ 2.2 million kg reduction in dust particle contamination. 	Totally creation and saving of 30 000 job opportunity, 19 059 have been created.

⁷ Estimations of the impact on employment and economy of the state are not available.

Appendix 3

Limitations and assumptions of analysis methods

To evaluate the green investment scheme activities in Ukraine and the use of funds received under the Kyoto Protocol international emissions trading mechanism were analyzed the data on target green investment projects, pending and approved by the National Environmental Investments Agency as of 20th December 2011. Disclosed information includes: name of the project and implementation location, the cost of the project, planned greenhouse gas emissions reduction per year, as well as information on the stage of project approval and implementation.

To evaluate the efficiency of projects implemented under the green investment scheme in Ukraine the declared quantities of greenhouse gas emissions reduction has been taken into account. Cost of reduction of 1 ton of CO₂-eq. via the green investment project implementation is defined as the specific capital investments: full project cost (capital investment in cash terms) is divided by the annual planned greenhouse gas emissions reduction.