

Sustainable Development Programme of Lugansk Oblast

The Project goal is to render support to the Government in efficient application of the Sustainable Development principles and practices at the regional level in order to improve socio-economic and ecological situation in one of the most vulnerable regions of Ukraine. This process shall be arranged through development and institutionalisation of the national mechanisms of public-private partnership, inclusive approach/community participation in decision making and use of international financing mechanisms for environmental protection and sustainable development.

The objectives of the project are:

1. To achieve a large-scale increase in urban employment targeting economically and socially disadvantaged groups through labour intensive public works, vocational training and small and medium enterprises (SME) contracting.
2. To promote sustainable development practices at the local level.
3. To strengthen institutional capacities and capabilities of municipalities and civil society organizations through improved policies and practices related to environmental and energy services.

Project activities consist of three components:

1. Support to development of transport infrastructure network in Lugansk oblast including city and inter-city service.
2. Removing barriers for coal bed methane utilization in Lugansk oblast through the Joint Implementation Mechanism (JI) of the Kyoto Protocol.
3. Removing barriers for urban landfills recovery and landfill methane utilisation through the Joint Implementation Mechanism (JI) of the Kyoto Protocol.

SINGATURE PAGE

Country: Ukraine



UNDAF Outcomes:

#4: By 2010, poverty reduced by 50% through equitable, area-based economic growth and targeted provision of inclusive social services.

Expected Outcomes:

1. Sustainable economic development through pro-poor policy reform.
2. Sustainable development policies and practices make the difference.

Expected Outputs/Annual Targets:

1. Large-scale urban employment targeting economically and socially disadvantaged groups achieved through labour intensive public works, vocational training and small and medium enterprises (SME) contracting.
2. National environmental strategy developed and sustainable development practices promoted at the local (municipal) level.
3. Institutional capacities and capabilities of municipalities and civil society organizations strengthened through improved policies and practices related to environment and energy services.

Implementing partner:

Lugansk Oblast State Administration
Lugansk Oblast Council

Responsible parties:

Ministry of Economy of Ukraine, Ministry of Environmental Protection of Ukraine, Ministry of Coal Industry of Ukraine, Ministry of Fuel and Energy of Ukraine, Ministry of transport and communications of Ukraine

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Programme Period: 2006-2010
Programme Component: Energy and Environment for Sustainable Development
Project Title: Sustainable Development Programme of Lugansk oblast
Project ID:
Project Duration: 4 years
Management Arrangement: NIP

Total Budget USD 11 100 000

Allocated resources:

- Regular (TRAC) USD 100 000
- Other: USD 11 000 000

Agreed by
(Lugansk Oblast State Administration)

Agreed by
Lugansk Oblast Council)

Agreed by (UNDP):



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PROJECT WORK PLAN BUDGET SHEET

See Annex 1.

I. SITUATIONAL ANALYSIS

1.1. Lugansk Oblast

Lugansk Region is situated in southeastern part of Ukraine on cross of transit ways between European countries and Caucasus region. Its territory is about 26.7 square km, from West to East 190 km, from North to South 250 km. It has common borders with Russian Federation oblasts: Belgorod, Voronezh, Rostov, overall state borders length is 776 km.

Overall population is 2409.1 thousands persons on January 1, 2006. Lugansk oblast is one of the most poli-ethnic regions of Ukraine with more than 100 nationalities living on its territory.

Lugansk oblast consists of 37 towns, 17 rayons, 109 small towns (settlements) and 792 villages. Its capital is Lugansk-city, one of the biggest cities of Ukraine, with 600 thousands population having a big industrial potential. Oblast has rich coal deposits, natural building materials, natural gas deposits and sources of mineral waters.

Landscape of Lugansk oblast is mostly steppe with rich chernozem soil 80% of which is ploughed up. Forests have only 7% of oblast territory. Climate is mild continental.

Considerable capital assets (5.2% of total capital assets of Ukraine) are the basic characteristic of Lugansk oblast, major part of which has significant moral depreciation, high energy consumption and laboriousness, non deep and non complex raw materials reprocessing.

While chemical and metal/steel giants of oblast are being developed small factories, plants, works are keeping suffering. The former basic oblasts industry – black coal mining is in poor condition too. There are 68 coal mines working in region and only 3 of them are cost-justifiable: “Rovenkyanratsyt” (6 mines, coal winning about 8 mil. ton), “Sverdlovskanratsyt” (6 mines, 5 mil. ton) and “Krasnodonvugillya” (14 mines). Four holdings are suffering: “Lysychanskvugillya” (5 mines), “Pervomayskvugillya” (7), “Donbasanratsyt” (8), “Anratsyt” (4). Economic indexes of the oblast’s biggest coal-mining holding “Luganskvugillya” (18 mines) galloping go down. The best quality coal of Ukraine (anthracite) is bedded on southern hills of Donetsk ridge. In eastern part of Old-industrial region of Donbas (Lisichansk, Pervomaysk, Stakhanov, Kirovsk, Bryanka) are concentrated deposits of energetically poorer coal and moreover, these deposits are considerably exhausted. Coal layers of 65 cm – 1 m thickness are basically developed here. Such layers have significant gradient and some mines achieved 1000 – 1200 m depth. Severe geological conditions and worn (out-of-repair) equipment make most of mines ineffective, and that is why cost price of extracted coal is high.

Started during soviet industrial revolution environment pollution processes nowadays have ecological disaster scale, even in spite of death of big part of oblast industry. Moreover chemical and metal/steel giants’ danger emissions not only in atmosphere but in regions water basin bastardize difficult situation with water supply of oblast’s population. Conversion in coal mining industry brought abandoned coal mines that nowadays brought in region: waterlogging, mine dump burning, radioactive waists, etc.

Because of the lack of workstations, economical and municipal poverty and growing of environment pollution small towns of Lugansk oblast basically uninhabited. Major part of oblast

refugees are in big cities of Russian Federation (Moscow, Saint-Petersburg), some of them moved to richer oblasts and cities of Ukraine and some went to EC in quest of better life.

Lugansk oblast government is doing its best to stop poverty in region. Its goal for the nearest future is sustainable development of material level of life (prosperity) and social provision of population. And three major steps in achieving of the goal are (source: *Development Strategy of Lugansk Oblast up to 2011*):

- Arrangement of conditions for comprehensive employment and growth of population revenue;
- Improvement of basic infrastructure of oblast, in the first place housing, social facilities, communication and, finally, transport; and
- Scope enlargement and improving of social services.
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1.2. Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) and its Joint Implementation Mechanism

It is more than several decades since the issue of climate change, which is commonly referred to as global warming, started to be recognized as a global environmental problem which threatens sustainability of ecosystems and brings about serious economic and social challenges for people and states around the globe. In response to emerging challenges of global warming the United Nations Framework Convention on Climate Change (UNFCCC) was signed at Rio Earth Summit in 1992 calling for countries to reduce anthropogenic emissions of greenhouse gases (GHG), the substances which are proved to cause the global warming effect. The Convention laid a basis for global climate change policies which were further elaborated in the course of the 1990s and were significantly reinforced after enter into force of the Kyoto Protocol in early 2005.

Ukraine is a Party to the UNFCCC since August 11, 1997. On March 15, 1999 Ukraine signed the Kyoto Protocol, which committed Ukraine, as an Annex I party, to stabilize its greenhouse gas emissions for the period of 2008-2012 at the 1990 level. The Kyoto Protocol was ratified by the Parliament of Ukraine on February 04, 2004.

Analyzing Ukrainian GHGs emission inventories one can make a conclusion that Ukraine during the first commitment period under the Kyoto Protocol (2008-2012) will comply with its quantity target for reduction of GHGs. In addition, Ukraine has a considerable potential to participate in international GHGs emission trading since it will not achieve the level of 1990, which is the base year under the Convention. Thus, there is a possibility for Ukraine to attract considerable financial resources for its economy. Ukraine's potential to participate in the flexible mechanisms of the Kyoto Protocol is significant. Unfortunately, just a few projects have been registered as Joint Implementation (JI) projects and experience of Ukraine in this field is very limited.

Joint Implementation approach gives countries the opportunity to achieve cost effective reduction of greenhouse gas emissions. Countries can benefit from international investments, increase their technical and managerial capacity, and hence contribute to the development.

Certain work was done by the Government of Ukraine towards the fulfilment of Ukraine's obligations under the UN Framework Convention on Climate Change. Recently adopted by the Government of Ukraine "Procedure for development, approval and implementation of the projects, aimed at decreasing of GHGs emissions under the Kyoto protocol" will promote the attraction of foreign investments and JI projects implementation in Ukraine.

Having a long and successful history of cooperation with the Government of Ukraine in policy advising and formulation, UNDP, after a wide support on the ratification by Ukraine of the

Kyoto protocol and in accordance with the *Memorandum of Understanding between the Ministry of Environmental Protection of Ukraine and the United Nations Development Programme for the cooperation on sustainable development, environment and energy*, implemented the “Establishment of JI Secretariat in Ukraine” project in Ukraine. It was the first initiative to build the capacities of the Ukrainian Government to participate in the JI scheme of the Kyoto Protocol. The following results were reached:

- Operational manual on JI project development and approval process in Ukraine;
- Database of potential JI projects in Ukraine;
- Book “Global climate change: economic-legal mechanisms for Kyoto protocol implementation in Ukraine”;
- Joint Implementation (JI) secretariat established.

UNDP Ukraine is also supporting Ukraine and its Government on practical implementation of the Kyoto Protocol flexible mechanisms by providing services for the Ukrainian private sector in developing project ideas under the JI mechanisms.

1.3. Transport

Among all the pollution sources in a city the road transport emissions are often the most important source. These emissions threaten human health, crops, and the material infrastructure. The transport sector is also responsible for a large share of gas and particle emissions that affect the climate. The emissions of greenhouse gases from transport (excluding international aviation and maritime shipping) are increasing dramatically during last decade, contributing a significant amount of total greenhouse gas emissions. CO₂ is the main contributor to transport greenhouse emissions. CO₂ emissions from transport is about 98 % of transport greenhouse gas emissions.

The greenhouse gases included in the atmospheric emissions accounts are those covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). To aggregate the greenhouse gases covered in the accounts, a weighting based on the relative global warming potential (GWP) of each of the gases is applied, using the effect of CO₂ over a 100 year period as a reference. This gives methane a weight of 21 relative to CO₂ and nitrous oxide a weight of 310 relative to CO₂. SF₆ has a GWP of 23,900 relative to CO₂. The GWP of the other fluorinated compounds varies according to the individual gas.

However not just CO₂ is being emitted by transport. In addition to emissions of CO₂ from the combustion of fossil fuels, mobile sources also emit a number of gases that live only a relatively short time in atmosphere (up to a few months) but can have a significant radiative forcing. Combustion engines emit nitrogen oxides (NO_x), carbon monoxide (CO), and unburned hydrocarbons, which are chemically transformed in the atmosphere, creating other gases such as ozone. Ozone is a greenhouse gas and poses a regional air pollution problem damaging human health and agricultural crops. Sulfuric fuels, particularly heavy oil used aboard ships, lead to the creation of sulfate particles that directly and indirectly increase the reflection of sunlight and thus have a cooling effect. Diesel engines emit considerable amounts of small soot particles that absorb sunlight and thus lead to a warming of the climate.

Road traffic clearly provides the largest net contribution to warming through its large emissions of CO₂ and significant emissions of ozone and soot. Total warming from road traffic is estimated to be about 0.19 Watts per square meter (W/m²), or about seven percent of the total climate forcing, because of the increase in the concentrations of ozone, soot, and greenhouse gases included in the Kyoto Protocol. This surprisingly low percentage results from road traffic having a shorter history than other emissions sectors, and thus having less responsibility for the

accumulated concentrations of long-lived greenhouse gases. This share will increase in the future.

The importance of this issue is also proved by UN GITE project. The Global Initiative on Transport Emissions (GITE) is a project undertaken jointly by the United Nations in cooperation with the World Bank and private sector (<http://www.un.org/gite/>). Here are the latest figures about transport emissions in different target areas:

EU

As an example, in the EU, the only sector to see an increase in emissions of greenhouse gases is the transport sector. Emissions of greenhouse gases from transport (excluding international aviation and maritime shipping) increased by 19 % between 1990 and 2000, contributing a fifth of total greenhouse gas emissions in 2000. CO₂ is the main contributor to transport greenhouse emissions (97 %) and road transport is in turn the largest contributor to these CO₂ emissions (92 % in 2000). (Source: <http://www.cicero.uio.no/fulltext.asp?id=3032&lang=en>).

Final energy consumption in the transport sector grew 28.6% in the EU-25 between 1990 and 2004. Improvements in fuel efficiency were offset by increases in passenger and freight transport demand (<http://www.evworld.com/news.cfm?newsid=14699>).

REUTERS reports that "The environmental performance of the transport sector is still unsatisfactory," the EEA said in a report covering EU nations along with some details of outsiders Turkey, Switzerland, Norway, Iceland and Liechtenstein. "This tendency threatens both Europe's and individual EU member states' progress toward their ... targets" under the U.N. Kyoto Protocol, it said in a 44-page report. "Therefore, additional policy initiatives and instruments are needed." "*Transport -- bottom of the Kyoto class again,*" it said. Transport, based mainly on burning oil, accounts for about a fifth of European emissions of heat-trapping gases from human activities. Cars and trucks account for more than 90 percent of transport emissions, ahead of ships, planes and trains. From 1990-2003, passenger transport volumes in Europe grew by 20 percent, the EEA said.

More people own cars and often drive further, for instance to out-of-town shopping malls. Air transport alone surged by 96 percent, aided by cheaper flights. (Source: <http://www.reuters.com/article/environmentNews/idUSL2669609620070226>)

G8

Transport accounted for about 21% of G8 greenhouse gas emissions in 2000, about the same as the manufacturing, construction and industrial sector combined (<http://www.g8.gov.uk/servlet/Servlet?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1097073714996>).

Ukraine

Until recently, public transportation services were financed by the State budget of Ukraine. However later the Government decided to transfer ownership of the public transportation fleet to the municipalities/cities whose population they serve. It also made the decision that it would, in future, provide no budgetary support to these municipalities. The consequence of this decision was that the municipalities started drastically cutting on maintenance of their existing fleet, due to budgetary constraints, and, for the same reason, were unable to replace those vehicles that were retired. This situation created a void and provided an opportunity to private providers to get into the public transportation business using predominantly old vehicles, with very high tail-pipe emissions. Thus, the overall result is that these factors have contributed to a rise in carbon

dioxide emissions, air pollution, traffic congestion, and even traffic fatalities, not just in big but also in medium-size cities, especially those that have witnessed strong economic growth.

There are no national statistics on greenhouse gas emissions from the transport sector, which once again reflects the attitude toward the problem despite the fact that Ukraine has ratified the Kyoto Protocol.

1.4. Coal bed methane

Coal mining industry is producing, transporting and using coal which is a popular and inexpensive fuel. This fuel used to be the source of energy in the industrial era and still provides energy to many people, living in the post-industrial era, though it has certain properties that lead to the generation of unwanted emissions. Having mentioned the obvious, it is also important to focus on the less obvious facts: many coal mining enterprises have set an objective to take environment protection more seriously and are implementing this objective in practice by caring about the environment.

Though most enterprises in the industry, as well as most enterprises of the Western countries, put an emphasis on the environment protection, new tasks are arising before the industry. There have already appeared the product markets with satisfactory characteristics and, as these markets are growing, the opportunities for the coal mining industry to benefit from their expansion have also increased. To date, the coal mining industry is trying to secure and expand its market share, especially taking into account that such scarce types of fuel as oil and natural gas have a higher freedom for price growth and are characterized by the price growing dynamics. However, in order to get the highest benefits from the changes occurring in the fuel and energy sectors, the coal mining industry should learn how to use the financial advantages that are provided by the markets of ecological products and by the rational utilization of other ecological products, such as scrubber ash and coal mine methane, i.e., coal bed methane.

Ukraine is one of the largest global coal producers - it is the tenth largest coal producer in the world and has substantial coal reserves (117.2 billion tonnes according to the Ministry of Fuel and Energy (MFE). Most of the coal (98.5%) is mined and the remaining 1.5% is attributed to the opencast production. Thanks to its abundance, respectively low cost and safety in use coal still remains an important source of Ukraine's commercial energy, accounting for almost 25% of the primary energy needs of the country. In recent years the amount of coal production has been steadily growing from 57 million tonnes in 1996 to 78 million tonnes in 2005.

The strategy for the development of the energy sector of Ukraine is to implement aggressive activities to recover and utilize coal mine methane as one of the most important supplementary energy resources. According to the estimates of the Ministry of Fuel and Energy, the resources of the coal mine methane amount to over 400 billion m³ compared to the total resources of the natural gas, which are estimated at 1,100 billion m³.

Currently, advanced methods of coal bed methane recovery are available in the world, in particular, with the use of specialized methods of drilling (vertical as well as horizontal and use of hydraulic fracturing) that can produce large amounts of coal bed methane. Development of coal mine methane is consistent with Ukraine's medium and long-term energy strategy, which envisages intensification of research and development activities in the area of new energy resources.

Methane is recovered from the coal mines before the coal production, as well as during and after mining works. The recovered methane is contained in the mine drainage and ventilation systems. In the abandoned mines the recovered methane is circulating throughout ventilation and drainage

systems. When methane is recovered before the production stage, it is pumped through the vertical boreholes drilled in the coal bed almost in the same manner as with a regular production of natural gas. The recovery of the CMM is often performed several years before the beginning of mining works. CMM that was pumped out before the coal production stage is also considered the coal bed methane. This methane is often of a very high quality that is consistent for the pumping into the natural gas pipelines. Horizontal boreholes are sometimes used for the performance of degasification before the beginning of mining works, but not too long before them. This process allows recovering of the high quality gas that can be extracted. However, its extraction is often inexpedient from the practical viewpoint and that is why a significant amount of this gas is released through the boreholes to the surface or comes out with the ventilation air. After the production of coal in the longwall mines, the methane can emit into the mine in the mixture with ventilation air, or can be pumped out through the vertical shafts. The quality of such CMM can be acceptable for pumping into the pipeline, but it can be polluted with the air and should be additionally processed before the pumping into the pipeline. Another source of methane emission from the coal mines is the ventilation air. Air draft is created in the mines in order to ensure the atmosphere that is safe to breathe and to thin methane to safe concentration – as a rule, to the level of less than 1%. The ventilation air is mixed with the released methane and this mixture is drawn out to the atmosphere. Technological progress and market sales fluctuations have stimulated the growth in the CBM/CMM extraction and use. Such projects are being sustainable and acquire ever more growing scale in the United States and other industrially developed countries. However, the implementation of such projects in the developing and economic transition countries has appeared to be a more complicated challenge.

Methane is a one of the greenhouse gases. Methane Global Warming Capacity (GWC) is 21 units. GWC of the greenhouse gases was determined by the Intergovernmental Expert Group on Climate Change (IEGCC), which is a body of the United Nations Framework Convention on Climate Change and is responsible for the review of research aspects. GWC characterizes the contribution of individual gases to the climate change during 100-year period and enables bringing of the emissions of all greenhouse gases to CO₂ – equivalent. For comparison one can look at CO₂, which is also one of the basic greenhouse gases, which GWC equals 1.

The State Programme for Industrial Development of Ukraine for 2003-2011, approved by the Cabinet of Ministers Resolution #1174 of July 2003, outlines that the recovery and utilisation of methane from coal bed as a complementary source of energy is of priority importance for the modernization of the energy sector of the country.

Coal mining industry is estimated to account for about 10% of all human-related methane emissions. Methane as a by-product of the coal production process is trapped in coalfields and released during and after mining. Methane explosions have caused disasters, both in terms of substantial loss of human lives and damage to physical infrastructure in underground coalmines all over the world. The standard way of addressing the hazard from methane explosions in active coalmines has been through ventilation, i.e., methane (some 80% of it) is ventilated out of the mine through ventilation shafts and released into the atmosphere. Besides, present day technologies are available to further reduce the risks of explosion in coalmines through “degasification” (also referred to as “degassing”), i.e. collecting the bulk of the residual (after ventilation) methane in pipes and draining it outside the mine; some 18% of the methane is evacuated this way, with the remaining 2 % evacuated through drilling from the surface prior to the start of mining activities. Unfortunately, most of this “degasified” methane is again simply released into the atmosphere; only 8% is captured and utilised.

Several countries have now adopted specialized technologies to capture the methane released through drilling of boreholes before the mine exploitation (coal bed methane – CBM) and the

process of degasification (coal mine methane – CMM) and utilise it to provide an additional source of energy for purposes of producing electricity, heat, etc. From the environmental and safety viewpoints, this methane utilisation assists in both reducing the amount of methane gas released into the atmosphere as well as increasing the safety of mining works. With regard to methane released into the atmosphere through ventilation, technologies do exist for the capture of a substantial amount of this gas, but the technology is not yet cost-effective.

It is estimated that the methane resource at the coalfields in Ukraine ranges from 432 to 560 billion m³. Ukraine produces coal at coal mines in such oblasts as Donetsk, Lugansk, Lviv and Volyn and it is estimated that they jointly emit some 2 billion m³ of methane annually into the atmosphere.

Most of the coal mines in Ukraine are Government-owned, with only a few in the private sector. In addition, new coal mines come into operation as required, while others close when they run out of their mineral resource. Hence, it becomes important to prepare the coal bed to degasification before a coal mine is put into operation, i.e. to create conditions to collect methane contained in such coal mines. It significantly increases the safety level in the functioning coal mine. In the case of closed mines, they still produce methane that can be tapped for energy purposes, as the pipeline system that was used for degasification when the mine was productive is still in working condition.

As it was indicated earlier, methane is a very potent gas in terms of global warming and, once released into the atmosphere, contributes to an accelerated climate change. In Ukraine there is growing trend for the production and use of coal from deeper seams, especially for the bituminous coals. With methane as a by-product, the coal companies and other end-users will find a ready-to-use alternate source of energy.

1.5. Landfill methane

Ukraine's First National Communication on Climate Change determines the total emission of methane from Ukrainian landfills in 1990 as 934,000 tonnes (18.7 million tonnes of CO₂ equivalent). The total 1990 methane emissions in the atmosphere from energy production, agriculture and waste generation made up 199.2 million tonnes of CO₂ equivalent, accounting for approximately 23% of the total greenhouses gases emissions in the country.

A number of state programs and laws set out Ukraine's priorities for the development of waste management and alternative energy sectors:

- 1) Law of Ukraine *On Protection of Ambient Air* (June 21, 2001) mandates preservation and improvement of ambient air quality, environmental safety for vital human activities, prevention of damage to the natural environment, and regulation of activities affecting climate;
- 2) Laws of Ukraine *On Environmental Protection* (June 25, 1991) and *On Municipal Waste* (March 5, 1998) govern handling of municipal solid waste, including its disposal, incineration and utilization;
- 3) Law of Ukraine *On Alternative Liquid and Gas Fuels* (January 14, 2000) sets utilization of alternative fuels as one of the development priorities for Ukraine;
- 4) Programme of Ukraine on State Support for the Development Alternative and Renewable Energy Sources, and Small Hydro and Thermal Energy Generation, (December 31, 1997)
- 5) DRAFT "Program for National Development of Ukraine," which sets national development strategy for the next three years, commits the Government of Ukraine to providing environmental safety and sustainability in Ukraine, outlining the following key tasks:
 - Ensure environmentally balanced development;
 - Lower the level of environmental pollution;

- Achieve, step-by-step, environmental sustainability;
Develop and implement market mechanisms for the efficient use of natural resources and environmental activities.

More than 12 million tons of municipal solid waste (MSW) are generated in Ukraine annually. The waste is disposed at approximately 700 official (permitted) landfills or open dumps. Burial in landfills is the main type of MSW disposal in Ukraine. Most landfills were started more than 30 years ago. Consequently, their engineering often does not meet national environmental protection regulations and violates current sanitary and technical requirements.

Landfills near urban settlements, especially large ones, have become a dangerous source of environmental pollution globally as well as locally. Emissions of methane and carbon dioxide generated during the anaerobic (without oxygen) decomposition of MSW contribute to changes in global climate. Methane releases are also responsible for spontaneous combustion of MSW in landfills, which results in formation of toxic organic chemicals known as dioxins. Thus, uncontrolled gas emissions in operating and closed landfills constitute a serious threat for environmental and human health. This issue can be partially solved by controlled capture and diversion of the landfill gas (LFG). Its subsequent use as an alternate fuel for energy, heat and steam generation contributes to mitigating landfill climate change impact.

Within the period of 1990-1998 Ukrainian landfill methane emissions remained almost constant at the level of 934 thousand tonnes of methane a year. Out of the total number of dumps in Ukraine (700), only 140 landfills are suitable for LFG extraction and utilisation. Of them, 90 are large-scale landfills that contain up to 30% of all MSW of Ukraine and are most economically attractive for LFG recovery programmes. The energy potential of the landfill gas that can be realistically used for energy production is estimated at 0.21 million toe (estimated gas volume 400 million m³/year), or approximately 0.3% of the total consumption of fossil fuels in Ukraine.¹ Therefore, there is significant potential for commercial recovery of the landfill gas in Ukraine, which makes it an important priority area for achieving economic development and environmental sustainability in Ukraine.

II. Project Objective

The Development objective of the project is to render support to the Government in efficient application of the Sustainable Development principles and practices at the regional level in order to improve socio-economic and ecological situation in one of the most vulnerable regions of Ukraine.

This process shall be arranged through development and institutionalisation of the national mechanisms of public-private partnership, inclusive approach/community participation in decision making and use of international financing mechanisms for environmental protection and sustainable development.

The objectives of the projects are:

1. To achieve a large-scale increase in urban employment targeting economically and socially disadvantaged groups through labour intensive public works, vocational training and small and medium enterprises (SME) contracting.

¹ G. Geletukha, T. Zhelyezna, Yu. Matveev, S. Tishayev. Bioenergy in Ukraine: State of the Art and Future Development// 12th European Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection. – Amsterdam. - 17-21 June 2002, p. 1371-1374.

2. To promote sustainable development practices at the local level.
3. To strengthen institutional capacities and capabilities of municipalities and civil society organizations through improved policies and practices related to environmental and energy services.

Project activities consist of three components:

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1. Support to development of transport infrastructure network in Lugansk oblast including city and inter-city service.

The project will lead to reduction the rate of growth in greenhouse gas (GHG) emissions in the form of mainly CO₂ from the transport sector by adopting a comprehensive integrated approach to sustainable transport in Lugansk oblast including city and inter-city service. The project will lay the groundwork for this by (i) concentrating on traffic demand management measures in the city of Lugansk and inter-city service, (ii) social marketing to encourage a shift in travel behaviour, (iv) demonstrating the effectiveness of bus rapid transit. It will address the policy and information barriers, which have thus far prevented the development of a sustainable transport market and also look into less energy-intensive and zero-emission modes of transport that would be pursued in the future.

Major expected outputs of the project include: (i) greater awareness of sustainable transport issues within the municipal government and among the public, (ii) improved ability of Lugansk municipality and oblast state administration to manage traffic demand and the public transportation system, (iii) clear responsibilities for the coordination of transport demand management activities, (iv) improved socio-economic indicators with regard to the transport sector, such as reduced mortality from air pollution and traffic accidents.

Without this project, which will serve as a catalyst to address transport-related environmental concerns and which will raise the profile of sustainable transport within the local government and among the public, CO₂ emissions from the transport sector will continue to grow unabated. Therefore, without allocating substantial financial resources and in the absence of solid expertise, the environmental situation will probably deteriorate considerably over the medium and long terms. Urban transport and road traffic management systems would remain inadequate and unable to cope with the growing public transport fleet against the background of the deteriorating provision of public transport services due to the lack of appropriate policies, regulations, and incentives framework, low transport management capacity, and poor state of municipally-owned public transport companies.

2. Removing barriers for coal bed methane utilization in Lugansk oblast through the Joint Implementation Mechanism (JI) of the Kyoto Protocol.

Within the proposed project it is envisaged to use the opportunities of one of “flexible mechanisms” of the Kyoto Protocol to UNFCCC, namely, the Joint Implementation mechanism that enables the reduction of GHG emissions, in particular, through the utilization of coal mine methane in the coal mining sector. The key results will be achieved through the UNDP assistance in addressing organizational and procedural issues, as well in the development of the

needed documents in accordance with the international requirements to the Joint Implementation (JI) projects.

Key JI Project results can be achieved through the development and implementation of the Assistance Program, which would include the following sections/areas: (i) selection of technical and technological solutions for the utilization of the coal mine methane; (ii) development of the Project Idea Note (PIN); (iii) implementation of the preliminary financial analysis of the planned technical and environment protection activities, (iv) search and approval of the conditions of joint activities with a potential investor, (v) development of Project Development Document (PDD) for the key project, (vi) arrangement and development of the contractual documents to sign and Agreement on the conditions of the joint project activities between the Mine and the investor. The contract shall obligatorily reflect the conditions for the sale of Emission Reduction Units (ERUs) derived by the Project and specify the recipient of these ERUs for (countries – please see Annex 1 to UNFCCC).

The Project implementation is planned in accordance with generally accepted and recommended project cycle for the Joint Implementation projects of such type. The JI project cycle includes a number of consecutive and interrelated steps: (i) project Idea Note (PIN), (ii) project Development Document (PDD), (iii) validation, (iv) registration, (v) monitoring, (vi) verification, (vii) sale of Emission Reduction Units (ERU).

A detailed description of the project cycle components and related activities is provided in the “Operations Manual” (developed within the UNDP project “Establishment of JI Secretariat in Ukraine”

Major expected outputs of the project include: (i) GHG emissions decreased, (ii) applicability and feasibility of CBM/CMM utilisation technology for Ukraine is demonstrated, (iii) new policies and legislative changes enabling development of CBM/CMM utilisation technologies are elaborated and introduced, (iv) recommendations for identifying appropriate CBM/CMM utilisation technologies for various types of mines are developed, (v) GHG emission factors and inventory methodologies are refined to reflect local conditions, (vi) an enabling environment for replication of the results of the project and initiation of other CBM/CMM utilisation projects in Ukraine is established, (viii) public awareness of the CBM/CMM utilisation technologies, their environmental benefits and economic opportunities is increased.

3. Removing barriers for urban landfills recovery and landfill methane utilisation through the Joint Implementation Mechanism (JI) of the Kyoto Protocol.

The implementation of the project will mitigate landfill methane emissions in Ukraine and create an enabling environment for disseminating LFG recovery technologies by removing barriers to landfill methane capture and use.

Following benchmarks were identified for the implementation of the project: (i) analyse the potential of landfill methane gas capture and use based on comparative analysis of three major landfill types in Ukraine, (ii) create an enabling legislative, institutional, and financial environment for biogas technology development, (iii) Implement a pilot demonstration projects at a selected landfill sites, (iv) assess the feasibility of the three types of landfills for energy generation, (v) disseminate information about LFG technologies and the outcomes of the project.

Major expected outputs of the project include: (i) GHG emissions decreased, (ii) applicability and feasibility of LFG recovery technology for Ukraine is demonstrated, (iii) new policies and legislative changes enabling development of LFG recovery technologies are elaborated and

introduced, (iv) guidelines for design and operation of the landfills are up-dated, (v) recommendations for identifying appropriate LFG recovery technologies for various types of landfills are developed, (vi) GHG emission factors and inventory methodologies are refined to reflect local conditions, (vii) an enabling environment for replication of the results of the project and initiation of other landfill methane recovery projects in Ukraine is established, (viii) public awareness of the LFG recovery technologies, their environmental benefits and economic opportunities is increased.

III. Justification

Project is developed on the basis of the *Country Programme Action Plan (2006 -2010) between the Government of Ukraine and the United Nations Development Programme* and fully corresponds with its provisions on both:

Part II Situation Analysis

2.8. With the ratification of the Kyoto Protocol in 2004, Ukraine has endorsed all major United Nations conventions related to the environment. Yet communities throughout the country remain vulnerable to the consequences of wasteful and harmful energy and environmental practices. Heavy industry in Ukraine is extremely energy-intensive and residential heating and urban transport are highly polluting. As a result, Ukraine produces around 2 per cent of global carbon dioxide emissions...

and

Part IV Proposed Programme

4.11. Decentralization and Local Governance. UNDP will support the decentralization processes initiated by the Government by providing policy advice on legislation improvement and by building the capacity of the regional, municipal and local authorities to function in the decentralized manner. Based on the best practices of Chernobyl, Crimea, Integrity in Action and Municipal Sustainable Development Programmes, UNDP will strengthen decentralized institutional practices by supporting governments in forging partnerships with civil society and business organizations, promoting transparent management of public resources, improving service delivery and facilitating inter-municipal and regional cooperation. Training programmes for civil servants will be introduced to build their capacities to take over the delegated responsibilities and good governance resource centers will be established in pilot regions. UNDP will also facilitate the interaction of all levels of government to ensure the development of locally sensitive national policies.

4.20. The new Country Programme will adopt an integrated approach to support private sector development and involvement. Partnerships with the private sector will be established and joint initiatives implemented to demonstrate the role of the private initiative in the development process and to promote corporate social responsibility in line with the Unleashing Entrepreneurship Report and the Global Compact. Positive image of the private sector as the driving force of development and innovation will be fostered. UNDP will also engage in advocacy, capacity building and policy development to facilitate effective cooperation between the private sector and the government and improve investment attractiveness of Ukrainian enterprises. Public-private dialogue will be encouraged to: 1) improve the legislative basis for granting permits, licensing and state control of economic activities; 2) make regulatory agencies accountable for the results of their regulatory activities; 3) and protect businesses from arbitrary inspections. National partners will also be supported in development of a comprehensive policy on competition, strengthening the independency of the Anti-monopoly Committee, and promotion of competition in network industries.

4.21. UNDP will continue developing capacities of local actors in economic governance, service delivery and resource management. Targeted area based programs will provide support in elaboration of economic and entrepreneurship development programs, improve business infrastructure, enhance access to micro-credit schemes, modern technologies and markets. Employment generation at the local level will be facilitated by opening of new training opportunities and creation of new jobs through public-private partnerships...

4.23. Area Development Schemes. UNDP will continue promoting innovative area development approaches through targeted initiatives for vulnerable regions and disadvantaged communities. The Sub-Component on Area Development will be closely linked with the Decentralization and Local Governance initiatives discussed in paragraph 4.11. of this document. In particular, recovery and development processes will be facilitated through a strengthened dialogue between national and regional stakeholders, improvement of community governance, support

to entrepreneurship development, enhancement of infrastructure and better access to quality public utilities and social services. UNDP will promote and empower networks of community organizations, educational and medical institutions, business associations, volunteer and youth groups to undertake grass roots initiatives aimed at improvement of social, economic and environmental conditions in selected areas. Economic development and employment generation will be stimulated by capacity building for local economic development planning, establishment and support to business promotion centers, development of community based saving and credit schemes and access to business training.

4.33. UNDP will support the government of Ukraine in improvement of environmental governance and meeting its international environmental commitments. National capacity self-assessment (NCSA) will be undertaken and a National Action Plan on Ukraine's implementation of its environmental obligations (on biodiversity, degradation/desertification and climate change mitigation) will be developed. It is expected that NCSA process as well as other policy initiatives supported by UNDP will facilitate dialogue, information exchange and cooperation among Ministries, scientific institutions, National Academy of Sciences, NGOs and the private sector and ensure integration of global sustainable development principles in the national and local policies on human and economic development.

4.34. Climate Change/Energy Efficiency. UNDP will support the Government of Ukraine in achieving the global environmental objective of climate change mitigation through reduction of overall fossil fuel consumption and associated green house gas emissions. Enhancement of Ukraine's energy efficiency will also contribute to achievement of a national objective – reduction of the present high level dependency on external fuel suppliers. UNDP will facilitate implementation of Kyoto Protocol's "flexible mechanisms", introduce large scale energy efficiency improvements in Ukraine's communal heat supply sector; and promote renewable energy sources.

4.35. UNDP will support Ukraine in harnessing benefits and economic advantages available through the implementation of Kyoto Protocol, ratified by Ukraine in 2004. Assistance will be provided in (i) development of legislative documents and procedures for complying with the UN Framework Convention on Climate Change; (ii) creation of the relevant infrastructure; and (iii) preparation and management of the Joint Implementation Projects.

4.41 Frameworks and Strategies for Sustainable Development. UNDP will promote policy frameworks and institutional mechanisms that will facilitate introduction of sustainable development practices throughout Ukraine. UNDP will build on the area development and community mobilization approaches (described in paragraphs 4.23-4.24) to improve environmental governance at the local/municipal level. The capacities of local authorities, environmental NGOs, community organizations and businesses to jointly prioritize environmental needs and prepare and implement local/municipal sustainable development plans will be improved. . Based on the experience in pilot localities, policy recommendations on sustainable development in Ukraine will be produced.

Risk Analysis

1. Transport

Particular barriers include:

Institutional and legal barriers:

- Lack of requirements for environmentally safe design of the transport infrastructure network.
- Lack of national regulatory policies on public-private partnership in the area of transport and transport infrastructure;
- Unclear distribution of responsibilities between the central and local authorities in the transport and transport infrastructure sector.

Technical and financial barriers:

- Lack of regulatory and methodological guidance on transport infrastructure development in accordance with modern environmental, engineering and economic requirements within a realistic timeframe and budget.
- High risks for investors involved in transport infrastructure projects because of the lack of information and technical experience in Ukraine.

Information barriers:

- Lack of information in municipalities on the requirements for design, construction and operation of transport infrastructure development projects, including information on best practices available in other countries and engineering options for improved environmental protection.
- Lack of information and knowledge on the equipment necessary for implementation of transport infrastructure development projects.
- Lack of awareness of local and global environmental impacts of transport infrastructure development projects.

2. Coal Bed Methane

In Ukraine, as well as throughout the world, there are significant obstacles to a large-scale introduction of technologies for CMM/CBM utilization and further use. In the first place, they include:

- Legal and regulatory issues;
- Taxation problems;
- Financial problems;
- Technological and infrastructural problems.

Legal and Regulatory Issues

Investors need to see clear legal norms regulating the agreements on the division of products and gas ownership rights; well-boring rights; re-registration of a license for exploration and license for production; arguments regulation mechanism; payments and procedures to take issues into court and means of legal protection in case of non-payment and contract violations.

Taxation Problems

Taxation problems are related to legal and regulatory issues because taxes are collected by the governmental bodies, or by their assignment, and are usually specified in some legal or regulatory act. However, tax bodies, in addition to the earlier mentioned barriers, create their own obstacles. A confusion created by an unclear and inconsistent application of the tax legislation can lead to an excessive taxation, which, in its turn, directly contributes to the reduction of investment profitability.

Financial Problems

The most important financial problems are related to a desire to perform transactions in hard currency with the use of internal country capital and fixed prices on gas for the forecasted income flow. The following should be taken into account here:

- Hard currency risk – which is a typical financial problem;
- Leadership of the local structures is an evidence of the fact that the project is supported and that country-based individuals and/or organizations are ready to take certain portion of risks;
- Energy prices, including prices for gas, can fluctuate and are sometimes subsidized.

Technological Problems

There are certain obstacles for the transfer of technologies to the developing countries and for the transfer of technologies from the industrially developed countries. The reasons for the existence of technological obstacles are numerous and may, in particular, include:

- Laws that limit the use of foreign equipment;
- Certification of equipment at the developing countries;
- Lack of capital to purchase equipment;

- Insufficiently developed infrastructure to transport the equipment to the destination point, or its inadequate maintenance after the installation;
- Lack of appropriate training and skills.

Infrastructure and Immaturity of Markets

Material and technical basis in many developing countries is insufficient to support the projects for the use of CMM/CBM at the same scale as in the industrially developed countries.

Though all these risks are real, the benefits obtained in the process of the development of the project to use CMM/CBM for finance, health care and security areas, as well as for the environment protection are huge, and this factor stimulates the United Nations, the World Bank and other stakeholders to further encourage the activities aimed at CMM/CBM use.

3. Landfill Methane

Institutional and legal barriers:

Overall, the Laws and regulatory documents of Ukraine governing municipal waste treatment do not mention landfill gas or provide any guidance on the use of LFG technology. Particular barriers include:

- Lack of requirements for environmentally safe design of the landfills and mitigation of their environmental impact, among other through landfill gas recovery or flaring.
- Lack of national standards for design and construction of the landfills with LFG recovery systems.
- Lack of national policies or guidelines governing development and environmental assessment of LFG recovery systems.
- Lack of locally adjusted methodologies for estimating LFG emissions.
- Lack of institutional procedures for carrying out assessments of LFG recovery systems and obtaining approval for their development at municipal and oblast (regional) levels.
- Uncertain regulatory guidance on the sale of recovered LFG. In principle LFG can be treated under *the Law on Alternative Fuels*, however it is not properly identified as an alternative fuel and clearer guidance is needed if the technology is to be disseminated.

Technical and financial barriers:

- Uncertainty of applicability and feasibility of LFG recovery technology in Ukraine due to the lack of precedence.
- Lack of regulatory and methodological guidance on construction or remediation of landfills in accordance with modern environmental, engineering and economic requirements within a realistic timeframe and budget.
- Lack of local technologies for monitoring, capture and utilization of LFG.
- Lack of economic incentives encouraging the use of LFG as an alternate fuel.
- High risks involved in LFG recovery projects because of the lack of information and technical experience.

Information barriers:

- *Municipalities are not aware of the economic potential for methane recovery from LFG both in their regions and throughout Ukraine.*
- Lack of information on the requirements for design, construction and operation of MSW landfills, including information on best practices available in other countries and engineering options for improved environmental protection.
- *Lack of information and knowledge on the equipment necessary for implementation of LFG monitoring, capture and utilization.*
- Lack of awareness of local and global environmental impacts of LFG.

MANAGEMENT ARRANGEMENT

This project will be implemented under **Country Programme Action Plan 2006-2010** (See Annex 2) with the Lugansk Oblast State Administration as the **National Implementing Partner (NIP)**. The capacity of this NIP is satisfactory for overall management and oversight of the project, but in course of the project implementation capacity of the Implementing Partner will be raised through relevant activities provided by Annual Work Plans. The NIP shall be responsible for the overall management of the project, primarily with regard to the responsibility for the achievement of the outputs (results), impact and objectives. Similarly, the NIP will be accountable to UNDP for the use of project resources.

The ultimate responsibility in the NIP for managing the project will be placed on a senior Government official who shall be designated as the **National Project Director (NPD)**. It is expected that the NPD will devote significant part of the working time on the project. Duties and responsibilities of the NPD are described by the NPD Handbook. In the fulfilment of its responsibilities to achieve the results, the NPD will get support from the **Project Board (PB)**.

The PB is the group responsible for making on a consensus basis management decisions for a project when guidance is required by the **Project Manager (PM)**, including recommendation for UNDP and NIP on approval of project revisions. Project reviews by this group are made at designated decision points during the running of a project, or as necessary when raised by the Project Manager. This group is consulted by the Project Manager for decisions when PM tolerances (i.e. constraints normally in terms of time and budget) have been exceeded.

This group contains three roles:

- 1) **Executive** (role represented by NIP) that holds the project ownership and chairs the group,
- 2) **Senior Supplier** (role represented by UNDP) that provides guidance regarding the technical feasibility of the project, and
- 3) **Senior Beneficiary** (role represented by the Ministry of Economy of Ukraine or any other state body duly authorized by the Government of Ukraine for coordination of the international technical assistance) that ensures the realization of project benefits from the perspective of project beneficiaries.

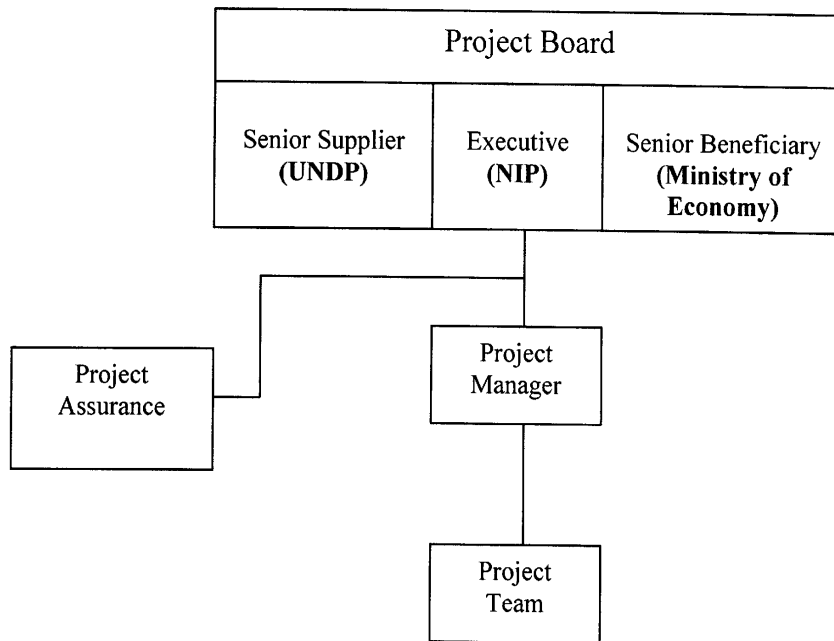
Potential members of the Project Board are reviewed and recommended for approval during the **Local Programme Advisory Committee (LPAC)** meeting. PB meets every six months on the NPD initiative. Accordingly, the authority of the NPD will be delegated to the PM for day-to-day implementation management.

PB ensures participation of the civil society representatives in its activity. These representatives perform a substantive advisory role for the PB and have no access/capacity for managerial and/or financial decisions.

Project Assurance is the responsibility of each Project Board member, but the role can be delegated. The Project Assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures that appropriate project management milestones are managed and completed. A UNDP Programme Manager

holds the Project Assurance role for the UNDP Board member, and a similar Government representatives will undertake this role for the NIP.

The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Project Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified limits of time and cost.



Project implementation will be governed by provisions of the present Project Document and UNDP Operations Manual. The project will utilize a direct payment modality. Country office support services will be charged in accordance with the Agreement between National Project Director and UNDP for the Provision of Services by UNDP (See Annex 3). Governance of the Project will be supported through annual work planning as well as reporting and monitoring the delivery of results and impact on the basis of the results framework. The annual work plans as well as progress reporting will be the responsibility of the project management and will be approved by NPD in close consultation with UNDP.

NIP mechanism of project implementation ensures a principal role of the state in the project activities and national ownership for the projects results with the Project Team providing expert and technical support without substitution of the national structures/mechanisms.

The work plan will be implemented upon its endorsement by NIP and UNDP. The endorsed work plan will serve as an authorization to the Project Manager to disbursement of funds and project implementation. Implementation responsibility will be put on the Project Manager in close partnership with the NIP in terms of ownership and UNDP – in terms of advisory support.

This will create an enabling environment for participatory decisions reached in the process of preparing the work plans to be implemented effectively and efficiently. The PM will consistently inform the NIP of the progress.

When acting as representative of the NIP, the NPD, together with national Responsible Parties, will ensure sound linkage of all decisions and experience of the project with building the internal capacity of the Implementing Partner and Responsible Parties. Together, the NPD and UNDP Programme manager will ensure participatory consultations with the key managers of the NIP to ensure the integration of project decisions and experience into national and local policies.

External and internal audit of the project will be organized in accordance with UNDP finance/operations rules and procedures.

A number of long-term international and national experts and advisors will be attracted to deal with distinct components of the project. The PB and Project Manager will receive the support of national experts, in particular:

1) Expert on JI mechanism of the Kyoto Protocol, 2) Expert on coal bed methane, 3) Expert landfill recovery and landfill methane, 4) Expert on transport infrastructure development.

To ensure the effective and efficient operations, the PB and Project Manager will be supported by:

1) Operations and Finance Specialist, 2) Information and Communication Specialist, 3) Project Assistant, 4) Driver, 5) Cleaning person.

The List of the ToRs and the ToRs of the foregoing posts are attached to the present Project Document (See Annex 4).

MONITORING AND EVALUATION

The Project Manager will prepare and submit annual progress reports to the Implementing Partner and UNDP. Based on discussions on these progress reports, annual work plans and budgets will be approved by the National Project Director.

Annual reports will be prepared and published for wide distribution and circulation. A distribution list will be developed and maintained by the PB in collaboration with the UNDP Public Information Unit.

A mid-term review will be conducted by the PB and national Responsible Parties to assess progress and adjust the programme in line with emerging needs. The review will include a stakeholders review workshop, and an external independent review the results of which will be discussed at a tripartite review meeting.

The Project is subject to UNDP regular audit. Issues concerning this audit will be governed by the UNDP Operations Manual.

PROJECT WORK PLAN MONITORING TOOL

See Annex 5.

LEGAL CONTEXT

This Project Document shall be the instrument referred to as such in Article 1 of the **Standard Basic Assistance Agreement (SBAA) between the Government of Ukraine and the UN Development Programme**, signed by the respective parties on 3 June 1993. The host country Implementing Partner shall, for the purposes of the SBAA, refer to the government cooperating agency described in the latter Agreement. The project shall be also governed by **the Country Programme Action Plan (2006-2010) between the Government of Ukraine and the United Nations Development Programme**, signed by the respective parties in 2006.

LIST OF ANNEXES

Annex 1. Project Work Plan Budget Sheet.

Annex 1-1. Project Calendar Workplan.

Annex 2. Country Programme Action Plan (2006-2010) between the Government of Ukraine and the United Nations Development Programme.

Annex 3. Agreement between the National Implementing Partner and UNDP for the Provision of Support Services by UNDP.

Annex 4. The List of ToRs and the ToRs of project posts.

Annex 5. Project Work Plan Monitoring Tool.