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## Summary of key environment and energy policy documents pertaining to Ukraine (April 15, 2008)

*Please find below a summary of key environment and energy policy documents pertaining to Ukraine. The summary below is requested by Lars Eklund, Sida-INEC and compiled by Anders Ekbohm (April 15, 2008) at the Environmental Economics Unit (EEU), Department of Economics, Göteborg University as part of Sida-EEU's institutional collaboration on environmental economics and strategic environmental assessment in Swedish development cooperation.*

*In agreement with Sida (att: Lars Eklund) the text below summarizes the following reports:*

- Government of Ukraine's new National Environmental Policy (2007)
- UN Economic Commission for Europe's (ECE) Environmental Performance Review (2007) for Ukraine.
- EU/European Commission's Country Strategy Paper (CSP; 2007) for Ukraine 2007-2013 and EC Country Environmental Profile (CEP) for Ukraine
- International Energy Agency's (IEA) and OECD's Energy Policy Review for Ukraine (2006).
- Ukraine's Government National Energy Strategy to 2030 (2006)
- EU/European Commission's support to Ukraine's energy sector

Based on these reports, some conclusions and recommendations are presented.

### **National Environmental Policy of Ukraine (2007)**

Ukraine's National Environmental Policy (2007) is very comprehensive and addresses a large set of issues. Key issues include Ukraine's ecosystem potentials (water, forests, biodiversity, soils, energy etc.), a country comparison between Ukraine's and the European systems of environmental management and policy; linking the national environmental policy with the principles of sustainable development; potentials of international, national, and state programs. Thematically the Policy addresses ecology

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and health, the Chernobyl catastrophe and its ecological problems; harmonization of energy policies and ecological safety; development of ecological partnerships in order to realize strategic decisions; and the state of environmental information and requirements for strategic environmental assessments and management.

A large share of the Policy is preoccupied with harmonization of Ukrainian and European Union legislation, in particular constitutional and legal guarantees of citizens' ecological rights; a review of key EU documents in the environmental protection sphere; the structure and system of Ukraine's environmental legislation. One chapter addresses environmental management, in particular reforming the economic system of natural resource use and restoration; reforming the licensing-permitting and taxation systems for improved environmental management; ecological auditing and the sustainable production; ensuring ecological responsibility and reduced risks; development, support and incentives for ecological entrepreneurship.

A full chapter is devoted to identifying and discussing Ukraine's national natural resource potentials including the soil, water, mineral, forest and biodiversity resources. The Policy also addresses air pollution problems at the local, national and global scales as well as waste and waste management.

In response to the problems caused by unsustainable resource degradation, the Policy elaborates on the potentials of environmental science and education development, the role of non-governmental and civil ecological organizations, implementation of the Aarhus Convention on information dissemination in Ukraine; local initiatives for environmental protection and state support and incentives for civil society organizations. Finally, the Policy addresses Ukraine's international integration in the area of environmental management, including bilateral and multi-lateral cooperation, implementation of Kiev Conference decisions, use of international technical assistance and investments and strategic recommendations.

The Policy contends that Ukraine's existing state management system is dominated by unsustainable natural resource exploitation, with large negative impacts on the natural environment and its ecosystems. The Policy states further that the Ukraine society has yet to appreciate the intrinsic value of nature as a vital resource, socially and economically, and that investments must be made to maintain the natural capital.

The Policy states that Ukraine is already a party to major international conventions. Legally, it has approved various national and all-state programs, including e.g. the National Program for Environmental rehabilitation of the Dnipro River Basin and Improvement of the Quality of Drinking Water, the all-state programs for "Establishing Ukraine's national ecological network for 2000-2015"; "Protection and Rehabilitation of the Azov and Black Sea Environment; and Toxic Waste Management, respectively. Mechanisms for realizing Ukraine's international obligations are developed with external support. Implementation of the international conventions is however slow, mainly due to political developments that have worked against creation of a strong national environmental management system that effectively attracts investment, provides economic incentives, and divides responsibility among state, society, and business.

Ecologically, the Policy describes Ukraine's unique characteristics in terms of the high-potential aquatic Dnipro River ecosystem, associated with a diversity of natural landscapes. However, the aquatic ecosystem, as well as the natural landscapes, have been subject to destruction and degradation. An additional environmental challenge is the Chernobyl catastrophe, which has led to substantial radioactive contamination, locally as well as internationally.

Regarding responses and measures to counteract the key environmental problems of Ukraine, the Policy addresses the fact that the State's monopoly on ecological responsibility has weakened the responsibility among those who consume natural resources (e.g. certain sectors, landowners, natural capital owners/managers). Contradictions pertaining to between the scale of consumption, (administrative) responsibilities and impacts of economic reforms (e.g. privatization) have been determining factors in delaying the creation of a cost-effective modern national environmental management system. Harmonizing the national environmental management system(s) with that of EU's is proposed as a key avenue to enhanced environmental management

Specific commitments to enhance environmental management outlined in the Policy include operationalization of the Political Declaration and Implementation Plan of the World Summit on Sustainable Development in Johannesburg, 2002, implementation of the agreements reached under the Fifth Ministerial Conference "Environment for Europe" (Kiev, 2003), the Framework Convention on the Protection and Sustainable Development of the Carpathians; the Declaration of Ministers of Ukraine, Russia, and Belarus on Ecological Rehabilitation of the Dnipro Basin; the Declaration on Education for Sustainable Development; the Strategy for Ecological Partnership and Cooperation among Countries of the UNECE Region; and the Ministers Declaration on Ecological Policy for the First Decade of the 21st Century; Ukraine government's policy for EU-integration, and accession to the WTO requirements

Moreover, the Policy addresses the limited use and effectiveness of economic mechanisms that regulate environmental and natural resource management. One major problem experienced so far with implementing economic instruments in an unstable macroeconomic environment is their relative-price impacts. However, rightly designed, implemented and enforced the Policy maintains that there are potentials in sustaining the efforts to use economic instruments to attain environmental objectives.

The Policy pays specific attention to ecology-health links; public health is an important indicator of the country's social, economic development and environmental situation. The country has experienced a decline in demographic indicators and in the population's health, partly due to high levels of ecological contamination (chemical, physical, and biological). Ukraine ranks very low in terms of life expectancy, which is partly due to environmental factors working in conjunction with other social and economic factors. The existing situation requires active interventions at state and regional levels.

## **Environmental Policy-making, Planning and Implementation – UN Economic Commission for Europe’s (ECE) Environmental Performance Review (2007)**

UN-ECE has performed its second Environmental Performance Review (EPR) of Ukraine by ECE. It was carried out seven years after the first Review in 1999. It measures Ukraine’s progress towards managing its environment since then, and in addressing upcoming environmental challenges.

Since its first Environmental Performance Review in 1999, Ukraine’s economy has improved remarkably, with a strong increase in GDP every year. The economy has also undergone multiple structural reforms, which, however, have resulted in a loss of clear direction in many sectors, including environmental management. In recent years, environmental protection and sustainable development have been low on the political agenda. Although a series of new laws and revised technical standards have significantly improved the basis for enforcement, development of environmental policies and strategies still has a long way to go.

Environmental legislation continued to develop rapidly until 2000, but the pace has slowed since then. Overall, environmental legislation is now comprehensive, with about 200 laws and by-laws, but it is also complex and sometimes inconsistent. It now needs to be arranged into systematic codes and harmonized with the European Union *acquis communautaire*, a huge and expensive task which would require about US\$ 1 billion. Still, pollution standards need to be simplified and updated. The single-media-permitting system inherited from the past is not based on best available technologies, and it applies uniformly to all kinds of small and large pollution emitters. The sharing of responsibility between national, regional and local inspection bodies is unclear. Priorities for inspections are not defined. Self-monitoring by enterprises is not properly carried out and related data are not closely analysed. Moreover, findings from inspections end up in statistical databases and are not followed up with in-depth analysis and appropriate actions. Although the transparency of administrative mechanisms has improved, the dialogue between the environmental authorities and the regulated community is below reasonable standards. Ukraine needs to anticipate the introduction of an integrated permitting system by giving proper training to inspection staff.

The strategic directions of the country for protecting its environment are unclear and are still based on a 1998 document that the first EPR already qualified as too vague. A solid environmental strategy is urgently needed, along with updated priorities. Whatever the time necessary for its elaboration, successful implementation will depend on the establishment of more stable institutional structures. The instability of environmental institutions is a recurrent and critical problem in Ukraine.

Ukraine has considerably broadened citizens’ rights with regard to accessing environmental information and participating in environmental decision-making, a fact that is praised by non-governmental organizations (NGOs) themselves. The country has also made remarkable progress in environmental education. The public, mostly through NGOs, has access to environmental information and can participate in environmental projects.

On the other hand, environmental monitoring still needs major improvement. Even though a monitoring programme was adopted in 2004, the related budget strengthened

and the monitoring network developed, there are still significant gaps in the monitoring coverage; priorities are often absent or contradictory; the treatment of data is inappropriate; and the data are practically unavailable. Moreover, there is no process for reconciling the data collected by different ministries, which results in different sets of values being issued for the same indicator. Some oblast environmental authorities have recently established online databases linking all monitoring institutions and polluting enterprises in their regions, an effort that needs to be replicated in other oblasts and at the national level.

Ukraine's record of achievements in international cooperation is mixed. International technical assistance is based on a sound set of national laws and on three-year programmes that establish national priorities, but a reporting system would help give an accurate and updated picture of progress in project execution. Ukraine's implementation of international conventions benefits from effective laws and has in recent years been carried out actively in the area of nature and biodiversity protection. However, certain projects have been suspended and are being audited upon donors' request. Another important issue for Ukraine is the Kyoto Protocol, which it ratified in 2004 and under which it could benefit from its unused carbon dioxide quotas by trading them, and from the introduction of cleaner technology through joint implementation mechanisms. Thus far, however, Ukraine has been slow to set up the necessary infrastructure and procedures to put the Kyoto mechanisms into practice, and many national enterprises are queuing up to secure a government decision on their proposed projects.

There has been little progress in the development of economic instruments as incentives for environmental protection. The taxes on natural resources (mainly on land, extracted minerals and water) make the bulk of the environmental revenues and represented an average 1.1 per cent of GDP over the period 1998–2004. Revenues from emissions charges, which constitute a more modest 0.1 per cent of GDP, have doubled since 1998, mostly due to improved tax collection and some rate adjustments. Also positive is the decrease in the subsidization of energy, heat, water and other utility prices since 1998. Nevertheless, the system of environment-related taxes and pollution charges is still too complicated and the charge levels too low to act as a sufficient incentive for complying with regulatory targets. There are more than 10,000 environmental funds in Ukraine over which the revenues from pollution charges are scattered, making the fund expenditures difficult to prioritize, rationalize and streamline within the scope of often unclear environmental priorities. In 2003, 84 per cent of National Environmental Fund expenditures were capital expenditures spent on water protection (36%), waste management (20%) and air protection (11%).

However, it is a real challenge to assess whether local environmental funds spend money efficiently and on environmental purposes and priorities. The number of environmental funds needs to be reduced, their expenditures aligned with environmental priorities, and their managerial structures improved to follow international best practices. Environmental expenditures doubled in absolute terms in the period 2002–2004, 80 per cent of them by enterprises. Expenditures from the environmental funds have also increased significantly since 1998. However, it is difficult to identify on what issues the money is actually spent, because the methodology for data collection, reporting and accounting for environmental expenditures is neither unified nor easy to trace. Also, there are no clear priorities for

public and private investors regarding their environmental spending, as there is no national environment strategy giving directions, priorities and targets.

Since 2002 there has been a slight decoupling between economic growth, energy intensity and related pollution. Insufficient domestic energy supply is a serious problem for Ukraine, which is only rich in low-quality coal with a high sulphur and ash content. In this context, energy savings are of key importance. The observed decoupling was partly due to the implementation of the Programme on Energy Savings (1997) and the decrease in the use of domestic coal. However, this trend is being increasingly offset by the resurgence of heavily polluting traditional industries, such as metallurgy, which are still using obsolete technologies. In 2006 Ukraine updated its Strategy on Energy until 2030, and it is adopting many new laws in this field. Economic measures are being introduced to promote energy efficiency.

Nevertheless, energy supply remains a difficult problem. Energy prices are still cross subsidized, and the ever-rising world-market prices for natural gas and oil are slowing down the scheduled closure of coal mines and causing a new increase in the use of domestic coal. In parallel, the political trend toward energy independency for the country is reactivating projects to expand nuclear energy production. Meanwhile, the development of renewable energy sources is not getting enough attention.

The environmental pressure from industry has remained almost unchanged since the first review (in particular those from the heavy manufacturing industries), as the structure of industry is still the same. Overall, air emissions have increased, as have greenhouse gas emissions, a large proportion of which come from methane emissions from mines. Environmental data related to industrial activities (for example, on common and hazardous waste, wastewater, pollution of soil and water bodies) is lacking, and therefore the exact environmental impact is difficult to evaluate. Although overall capital investments have grown significantly since 2002, the environmental performance of industry has not improved much. This is shown by the small number of enterprises that have introduced environmental management systems (about 30 enterprises had ISO 14000 certification by the end of 2005), the handful of pilot projects initiated on the introduction of integrated pollution prevention and control, and the insufficient capacity and low efficiency of clean technology centres. Moreover, the industrial sector lacks strategies and policies for its sustainable development.

Political pressure to encourage industry to put priority on environmental protection is strongly needed. There is a big potential to modernize industrial technology through developing joint implementation projects under the Kyoto protocol, but this potential is unexploited. The growing environmental pressures from the transport sector have not yet caught sufficient attention of the authorities. There is no national strategy for transport. The little interest paid to the environmental impacts of this sector is reflected in the very poor related statistical data available. The deteriorating quality of urban air is a growing concern, linked to the use of bad quality fuels, obsolete vehicle engines, increasing number of private cars and resulting traffic congestion problems. With the economic recovery and improving standards of living, the ageing public transportation fleet is at risk to be offset by the development of private cars. The government and the municipalities underestimate the environmental problems brought

by the transport sector. Strategic concepts for the sustainable development of this sector are badly needed, as the sector is under rapid and profound transformation.

### *Land Degradation and Land Use*

The sustainable management of rural and urban land is another challenge for Ukraine. With the privatization process well advanced, the number of landowners and land parcels in private ownership has increased dramatically. This has not solved the many existing land management problems: large areas of eroded land (5.8% severely eroded), land degraded by human activities (18%), reduced soil fertility and contaminated land; soil acidification, compaction and salinization caused by agricultural practices; fragmentation of habitats; uncontrolled development of infrastructure; and urban sprawl. The state has permitted privatization of areas that should have been protected, and it now needs to buy back plots if it wants to increase the share of protected land (currently only 4.5% of the territory). The Land Code of 2001 stipulates all the provisions for sustainable land management, but the key tools are still missing: there is no land cadastre or title registry system, and therefore the land market is not functioning properly. Moreover, privatization has resulted in land fragmentation, which seriously complicates the implementation of good agricultural practices and impairs the protection of biodiversity. Urban development, land protection and land use lack an appropriate strategic, legal and institutional framework that would ensure a more rational use and protection of land.

### **EU Country Strategy Paper 2007-2013 for Ukraine and EU Country Environmental Profile of Ukraine**

EU's Country Strategy Paper (CSP) for Ukraine covers the period 2007-2013. Assistance to Ukraine over that period will principally be provided under the new European Neighbourhood and Partnership Instrument (ENPI) which is being established to promote the development of an area of prosperity and "good neighbourliness" between the European Union and the partner countries covered by the European Neighbourhood Policy (ENP).

According to the Strategy, Ukraine has pursued an agenda of ambitious reforms to root democracy and the market economy firmly in the country and to bring Ukraine closer to the EU since the events which led to the "orange revolution" at the end of 2004. Presently, the principal objective of cooperation between the EU and Ukraine is to develop an increasingly close relationship, going beyond past levels of cooperation to gradual economic integration and deeper political cooperation, including on foreign and security policy.

EC assistance over the period covered by this strategy will therefore aim at supporting Ukraine's ambitious reform agenda on the basis of the policy objectives defined in the Partnership and Cooperation Agreement (PCA) of April 1998 and the EU-Ukraine Action Plan of February 2005. The National Indicative Programme (NIP) for 2007-2010 translates this into support for three priority areas: i) *democratic development and good governance*; ii) *regulatory reform and administrative capacity building*; and iii) *infrastructure development*, in particular in the *transport, energy and environment sectors*, in close collaboration with the EIB, EBRD and other IFIs.

## *Ukraine's State of the Environment and Government response*

The key environmental problems of Ukraine include air and water pollution, solid and hazardous waste, natural resource degradation and radiation contamination in the north-eastern part of the country. Air pollution is becoming a health and social problem. With regard to water quality, the Dniepro which supplies three quarters of Ukraine's fresh water is heavily polluted. The Crimea suffers from water supply shortages. International cooperation to address environmental concerns in the Azova Sea and the Black Sea areas needs to be enhanced. Existing waste water collection and treatment infrastructure needs to be upgraded and new capacity constructed. Waste management is a serious problem, including prevention, collection, treatment, recovery and final disposal. Large amounts of hazardous waste have been generated, in particular mining waste. Industrial pollution is a challenge, in view of the historical pollution sources and the inefficient use of resources as well as emissions into air, water and the waste generated by the industrial installations. As regards nature protection, deforestation and illegal logging are giving rise to economic and health costs.

Current trans-boundary environmental issues include the use and protection of shared waters – in particular the Danube River and the Black Sea. The Danube is a heavily utilised resource. It supports drinking water supply, irrigation, industry, fishing, tourism, power generation and navigation. It is frequently also the point of final disposal for wastewater. Severe problems with water quality and quantity have resulted, and biodiversity in the region is diminishing. The Black Sea is subject to similar problems, the most serious of which are wastewater discharges, oil pollution in coastal areas and a loss of biodiversity, including fish stocks. As regards global environment issues, Ukraine has shown keen interest in climate change, in particular the possibilities to use the flexible mechanisms under the Kyoto Protocol, which Ukraine ratified in April 2004. Ukraine has entered into a binding commitment to freeze its greenhouse gas emissions at the 1990 reference level by 2008–2012, and therefore needs to implement the relevant provisions of the Protocol.

Environment policy, Environmental legislation and implementation: In 1998 Ukraine drafted a National Strategy for the Environment to cover the period 1998-2008. It was amended in 2003 and has been the basis for developing sectoral programmes on key environment issues such as environmental safety (including nuclear energy), drinking water and construction or rehabilitation of water facilities, prevention of deterioration of the Black Sea, sustainable management of natural resources, environment technologies and protection of biological and landscape diversity. The Strategy is currently being reviewed.

Ukraine adopted the Framework Law on Environment Protection in 1991. Since then it has adopted several pieces of legislation to aim at convergence with EU acquis. With regard to horizontal issues, Ukrainian legislation contains provisions on environment impact assessment, but these are not always implemented and enforced. Concerning access to information and public participation, Ukraine has been seeking to incorporate the provisions of the Aarhus Convention into its national legislation. In the case of air quality, framework legislation is in place, but monitoring procedures and equipment need to be improved. In the area of waste management, adoption of a new law on waste is under consideration. Mechanisms for implementation are also

lacking. Further implementation mechanisms are needed to address water quality problems, as in some regions water quality needs considerable improvement. In the field of nature protection, a law on ecological networks has been adopted. Legislation on integrated industrial permits is under consideration. A draft law aiming at integrating environmental considerations into all sectoral policies is under consideration. Overall, environment legislation is in place in most areas but still needs further development. Implementing legislation is not yet fully developed and applied. Ukraine faces difficulties with implementation and enforcement of environment legislation due to limited administrative capacities and financial resources, especially at regional and local levels.

Administrative capacity: In September 2003 the Ministry of the Environment and Natural Resources was split into the Ministry of Protection of the Natural Environment of Ukraine and the State Committee for Natural Resources. The former is in charge of environment protection, the latter of rational use of natural resources. During 2005 the State Committee for Natural Resources was liquidated and its staff and functions were transferred to the Ministry of Protection of the Natural Environment. Other ministries, such as the Ministry of Health, are also responsible for environment-related matters. The Ministry of the Environment and Natural Resources has branch offices at regional level, called State Departments for Environment Protection. The Government established an inter-departmental commission on environment monitoring in 2001. In order to enhance strategic planning, implementation and enforcement of environment legislation, the major challenge facing Ukraine is to strengthen administrative capacity at national, regional and local levels, including coordination between the relevant authorities.

Participation in regional and international processes: Ukraine has ratified the relevant international and regional conventions (including the Espoo and Bern Conventions) to which it is signatory, with the exception of the Stockholm Convention on Persistent Organic Pollutants (POPs) and the following protocols of the UN-ECE Convention on Long- Range Transboundary Air Pollution: Protocol on Persistent Organic Pollutants; Protocol on Heavy Metals; Protocol on Further Reduction of Sulphur Emissions; Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes. Ukraine is a member of the Danube-Black Sea (DABLAS) Task Force, which provides a platform for cooperation between IFIs, donors and beneficiaries on water protection and water-related issues concerning the Danube and the Black Sea. The main aim is to encourage a strategic focus to the use of financing, and to coordinate action between all financial instruments operating in this region. Ukraine is also a member of the International Commission for the Protection of the Danube River (ICPDR), which is identifying the work necessary to implement the EU Water Framework Directive – with the aim of keeping water in good ecological and chemical condition – across the whole of the basin.

Ukraine is also participating in the “Environment for Europe” process, which is a multilateral framework created in 1989 to steer the process of raising environmental awareness in the countries of Central and Eastern Europe, emerging from the old regimes and moving closer to the EU. The core activities of this process are undertaken by a Task Force co-chaired by the Commission and an NIS environment minister. Ukraine is participating in the Eastern Europe, Caucasus and Central Asia regional component of the EU Water Initiative, a regional component of the EU

Water Initiative as announced at the 2002 World Summit on Sustainable Development. The initiative aims to promote better water governance and coordination between stakeholders.

The EU-Ukraine Working Group on Climate Change met for the first time in 2002 and held its second meeting in July 2005. Work is under way to establish a Regional Environmental Centre (REC) to help to address environment issues in Ukraine and neighbouring countries by promoting cooperation between various stakeholders at national and local levels, including NGOs, governmental bodies, local communities and the business sector. The REC would also aim to promote public participation in the environmental decision-making process.

Key areas of the environment where action is required: Ukraine faces significant challenges to promote environment protection. Key areas include air quality, water quality, waste management, nature protection and radiation contamination in the north-eastern part of the country. As regards climate change, Ukraine needs to implement the relevant provisions of the Kyoto Protocol to the UN Framework Convention on Climate Change. Ukraine has significant possibilities to use flexible mechanisms under this Protocol. The institutional and administrative capacity needs strengthening, in particular as regards strategic planning, implementation and enforcement. A fully operational Regional Environment Centre (REC) could help to promote environmental awareness and protection by providing a forum for cooperation between the Government, civil society/NGOs and the private sector. The key environment areas where action is required are identified in the environment section of the EU-Ukraine Action Plan established in the framework of the European Neighbourhood Policy. It defines a set of priorities for action with regard to environmental governance, issue-specific activities as well as on international and regional cooperation on environment issues. Progress towards implementing the Action Plan will also contribute to fulfilling the objectives of the Partnership and Cooperation Agreement.

### **International Energy Agency's (IEA)/OECD's Energy Policy Review for Ukraine (2006)**

According to the International Energy Agency's (IEA)/OECD's Energy Policy Review for Ukraine (2006), Ukraine's energy policy is driven by the country's strong desire to improve energy security and reduce natural gas imports from Russia. Since political independence in 1991, Ukraine has made some progress in reducing its dependence on energy imports, primarily by improving energy efficiency. Ukraine's present energy policy remains mainly focused on energy production. There is thus much opportunity to achieve greater energy efficiency. IEA/OECD identifies *three priority areas: energy efficiency, cost-reflective pricing and transparency*. Ukraine is distinct from other industrialised countries in its economy's intensive use of energy. This is detrimental to the economy: it makes Ukraine less competitive and highly vulnerable to price shifts. Improving energy efficiency represents a major opportunity to increase energy security, reduce imports, improve economic growth and lower its environmental footprint. Greater energy efficiency will be much easier to achieve if domestic prices reflect the full, long-term costs.

Today, most energy prices in Ukraine only cover operational costs. Because of these low prices, the energy sector has had little or no money for investment, which has ultimately had a negative effect on reliability, efficiency and long-term, economic sustainability. To attract investment, Ukraine must allow investors to cover their costs and make a reasonable return. Finally, Ukraine could strengthen its energy policy by improving the transparency of its energy data and market rules. Energy efficiency represents Ukraine's single best opportunity to improve energy security. It will also reduce the economic burden of energy use, making Ukraine less vulnerable to rising energy prices and disruptions. Moreover, efficiency is essential for Ukraine's growth and development. Today, Ukraine uses energy about three times less efficiently than EU countries on average; even neighbouring Russia and Belarus are less energy intensive. The government's own projections for energy efficiency and expanded domestic energy supply show that energy efficiency is less expensive and has a bigger impact on reducing imports than projected new domestic supply. Ukraine put an energy-efficiency policy in place in 1994. However, insufficient funding was allocated to this goal so the policy could not be fully implemented. In 2005, a government decree closed the State Committee for Energy Conservation. This Committee was responsible for developing and implementing energy efficiency programmes nationwide; it also worked to encourage energy efficiency through standards, public information campaigns and mechanisms to promote financing. Recognising the void left by the closure of the State Committee for Energy Conservation, the government has now opened a new National Agency on Efficient Energy Use. Investment in energy efficiency is growing, reflecting the economic benefits of such investments.

Driving forces to inefficient energy use: Several factors contribute to Ukraine's inefficiency. Low energy prices are one of the more important ones. Only oil and oil product prices are at international levels. Despite recent increases in import prices, retail natural gas prices remain several times lower than prices in Western Europe and they are also lower than prices in neighbours like Russia. Coal prices do not cover production costs which makes them financially vulnerable. Electricity prices cover operating costs, but not investment costs. This is most pronounced for nuclear energy, where the nuclear tariff effectively does not cover capital expenditures and decommissioning. Likewise, the tariff does not fully fund nuclear safety or waste disposal. District heat is also priced below long-term costs, which leaves no money for investment and ultimately leads to dangerous outages and inefficiency. The National Electricity Regulatory Commission (NERC) and the government have developed a plan to raise electricity and gas tariffs; consistent follow through is vital to improving energy efficiency and energy security.

Greater transparency in energy data and market rules could boost investment and thereby enhance competition and service quality. High-quality energy statistics and well-founded energy projections are foundations of effective policy making. Ukraine has good energy-production data, but very little data on energy consumption. This can distort policy because it complicates the task of assessing demand trends. The Ukrainian government recognizes that its policy would benefit from demand-driven energy projections, as well as from using more sophisticated economic modelling tools and approaches. A second element of transparency needed is clear market rules that are enforced uniformly. Such rules would stimulate investment and enhance fair

competition in Ukraine. Ukrainian citizens will also benefit from a more transparent marketplace because competition typically brings better services.

Energy Supply: Ukraine depends on imports for most of its energy supply. The country is particularly dependent on natural gas in its energy balance. Domestic gas production meets about 25% of total demand. The rest is imported, and all of that through Russian pipes. International gas purchases, domestic production, transmission and wholesale sales are primarily in the hands of the state-owned firm Naftogaz of Ukraine. Regional gas companies, most of which are private, are responsible for distribution and related retail sales. According to IEA (2006), the Swiss-based gas trading company RosUkrEnergO is playing a growing and persistently opaque role in Ukraine's gas sector. In early 2006, it became the sole supplier of imported gas and has a growing role in the retail sector as well. Its ownership structure is murky, and the company appears to make significant profit simply because it signs contracts to transit gas from Central Asia to Ukraine. To reduce its reliance on gas imports, Ukraine plans to increase domestic production. Achieving this goal will require improving the upstream investment climate. The private sector has a more predominant role in Ukraine's oil sector than in the gas sector: private companies, primarily Russian, own most of the refineries and filling stations. State-owned companies do control most oil production and transportation. The government has expressed concern about the potential for market manipulation because relatively few companies sell oil products domestically. In 2005 and 2006, several refineries reduced output for extended modernisation upgrades. Ukrainian refineries tend to produce heavier products than demand currently warrants: too much fuel oil, too little gasoline.

Energy transit is very important to Ukraine. It is the largest gas transit country in the world by volume and also hosts major oil transit routes because of its location between Russia and Europe. The Ukrainian government views transit as a partial guarantee of secure energy supplies, as energy suppliers in the East cannot easily shut off Ukraine without harming customers farther downstream. The gas dispute in early January 2006 showed that simply providing transit routes does not make Ukraine immune from supply disruption. This has become even more evident in recent years as Russia has made concerted efforts to diversify its supply routes for gas and oil. Three pipelines – the North European Gas Pipeline, Yamal and Bluestream – are or will be serious alternatives to transit through Ukraine, which means that Ukraine's transit business and energy security will depend increasingly on relations with Russia. Likewise, European buyers are relying more on sea routes for oil and gas supply, which could affect the geopolitical importance of Ukraine's transit business. The volumes of oil transited have dropped gradually in recent years, though gas transit volumes are more or less stable. Given the many options on the table, greater transparency in the transit sector would build credibility to Ukraine as a route for reliable transit. Likewise, permitting private operating licences could attract investments needed for system upgrading, international competitiveness and reliability. For much of the 20th century, coal fuelled Ukraine's industrial growth. However, the coal industry has been in decline for several decades: coal output dropped steadily, particularly since the fall of the Soviet Union.

Production has stabilised today, although the sector still faces major problems – many of which can be attributed to poor governance. For example, industrial groups control

the sale of coal from many mines while also supplying the same mines with expensive equipment and materials. This makes for profitable steel production, but keeps the coal mines operating at a loss. In addition, the government provides significant production and investment subsidies. The government has a plan to close unprofitable mines; most of the mines slated for closure have already been shut down. Still, the remaining mines are, by and large, not yet profitable. The government has also been privatising mines, though most mines are still in state hands. Private Ukrainian mines are, on average, more profitable and have higher productivity levels. The coal sector also needs to address significant environmental and worker safety issues: Ukrainian coal mines are the second most dangerous in the world, after China's.

The power sector has undergone liberalisation and privatisation, but the reforms are not yet complete. Ukraine has a wholesale power market with a single buyer, called Energorynok. In theory, regional thermal power companies compete to sell their power, however, because of frequent fuel shortages and emergencies, the government plays a large role in allocating fuel. Nuclear, hydro and wind stations also sell to the wholesale market, but at regulated prices.

Nuclear energy accounts for about half of total power production, and the government would like to see the share of nuclear energy in the energy balance grow further. Only one of the major power supply companies is majority privately held. In the mid-1990s, the government unbundled transmission and distribution from supply. However, in 2004, the government created a new company, Energy Company of Ukraine, which took over the state power assets (both supply and distribution). The grid company and nuclear operator are also state owned, although in separate companies. Several of the regional distribution companies are in private hands and are not part of Energy Company of Ukraine. The power sector is significantly more stable than it was several years ago, with fewer outages, more stable grid frequency and higher levels of payment. At the same time, the sector needs significant new investment and would benefit from a more vibrant market with greater incentives for efficiency. The nuclear sector sees some of the largest distortions because wholesale tariffs fail to cover a large share of the cost of nuclear energy.

The district heating sector is at an earlier stage of reform, although the government has recently done significant work to outline a new sectoral strategy and has adopted a Law on Heat Supply. Most Ukrainian families rely on district heating, and district heating accounts for a large share of total energy use. At the same time, district heating companies have not been able to make significant capital investments for years because of the low tariffs. This implies that many systems are in financial trouble and at high risk for outages and technical failures. The district heating sector is also a prime candidate for energy-efficiency improvements, in all parts of the energy chain, from production to distribution and consumption. The need for better government co-ordination is possibly most clear in this sector. In order to limit gas demand, the Ministry of Fuel and Energy plans to shift away from district heating toward electric heating.

At the same time, the Ministry of Construction wants to reform the district heating sector and make it more efficient. Investing in completely new heating systems would be very expensive, and electricity is an inefficient way of providing heat. Likewise, district heating's low tariffs often serve as a substitute for social support for the poor;

stronger co-ordination might help in identifying welfare solutions that do not tax district heating systems. Renewable energy has a small but growing share in Ukraine's energy balance. The bulk of this comes from large hydro power plants. The government has also invested in wind farms. Use of biomass, mainly for heat, is relatively common in rural areas and many agricultural villages have been switching to biomass-fired boilers for their small district heating systems.

Ukraine also has potentials to expand bio-fuel production. Ukraine has adopted several targets and sectoral programmes to increase the use of renewables, but implementation has been slower than promised. Underpriced conventional fuels are a major barrier to expanding renewables. Ukraine's energy sector has high pollution levels. Two main reasons for this are Ukraine's high energy intensity and the obsolete technology used in energy transformation. Power and heat plants are old and have few pollution controls. In addition, government energy policy has not traditionally placed high priority on environmental concerns, although the situation is changing gradually. The government now has programmes to promote energy efficiency and modernisation at power plants. One could see this shift occurring even as the government developed the Energy Strategy of Ukraine to 2030, which ultimately did address environmental protection in each sectoral chapter.

Mitigation of greenhouse gas emissions: Ukraine has major opportunities through the Kyoto Protocol to finance energy efficiency and renewable energy, and associated emission reductions. To date, the government has been slow to pursue those opportunities: it approved rules for one of the Kyoto mechanisms, joint implementation, only in 2006. In conclusion, Ukraine has taken important steps in meeting key goals of energy policy related to energy security, economic efficiency and environmental protection. However, it has many opportunities to further expand reforms by improving energy efficiency, adopting cost-reflective pricing and enhancing transparency. These steps, while difficult, will position Ukraine to meet new challenges, such as import price increases and global competition, while increasing its energy autonomy.

### **Ukraine's Energy Strategy to 2030 (2006)**

Ukraine first official energy strategy – the National Energy Programme of Ukraine to 2010 – was developed in the mid-1990s and was adopted in 1996. Ukraine also adopted several so-called comprehensive state programmes that outlined the government medium-term policies in various sub-sectors: Creation of a Nuclear Fuel Cycle (1994); Development of Hydrocarbon Resources in the Ukrainian Sector of the Black and Azov Seas (1996); Energy Conservation (1997); Construction of Wind Power Stations (1997); Oil and Gas of Ukraine until 2010 (2001) and Thermal Power Plant Reconstruction (2002). In 2001, the National Academy of Sciences developed a proposal for an Energy Strategy to 2030 and over the Longer Term, which it presented for approval to the parliament, the Cabinet of Ministers and the president.

By 2003-04 it became clear that the comprehensive energy programmes were not being implemented as expected. The government tasked the Ministry of Fuel and Energy with preparing an improved energy strategy, based on the most recent statistical data and the state policy trends. In March 2006, the Cabinet of Ministers approved the Energy Strategy to 2030.

The major strategic objectives of the Energy Strategy of Ukraine to 2030 are to:

- Create favourable conditions for meeting energy demand in a sustainable way.
- Determine mechanisms for the safe, reliable and stable functioning of the energy system, and for its efficient development; create favourable conditions for implementing these mechanisms;
- Increase domestic energy security;
- Reduce the impact on the environment;
- Reduce the cost per unit of energy production and use, via the following measures: assuring efficient energy use, introducing energy-saving technologies, rationalising the structure of industry and reducing the share of energy-intensive technologies;
- Integrate Ukraine's energy system into the European energy system, with gradual growth of electricity exports; strengthen Ukraine's position as an oil and gas transit nation.

According to ECE/OECD's Energy Performance Review (2006), Ukraine's Energy Strategy to 2030 provides a comprehensive overview of the current situation in the energy sector. However, the projections seem to be based on political objectives, rather than on detailed statistical data and models, without economic analysis of whether these objectives are feasible. As a result, the projected demand for energy may be significantly inflated. Overall, the Energy Strategy to 2030 is heavily focused on energy supply, while measures to attain higher energy efficiency (reformation of energy prices) are given limited elaboration. In addition, the Energy Strategy to 2030 would, according to ECE, benefit from fuller consideration of fiscal, financial, social, environmental and employment issues related to the energy sector.

Most objectives of the Energy Strategy to 2030 echo the key tasks and priorities of the government programme Towards the People, which was endorsed by the parliament in early 2005. According to this programme and the Energy Strategy to 2030, the key priorities for Ukraine include improving the country's energy security, strengthening its position on international energy markets and reducing the energy intensity of the economy. Another priority is integrating Ukraine's energy system into the European energy system, which is a component of Ukraine's general strategic goal of joining the EU. Fighting corruption, particularly in the energy sector, was also announced as one the government's top priorities.

### **EU-support to Ukraine's energy sector**

Regarding EU-support to Ukraine's energy sector, Ukraine is stated to be a key strategic partner to EU in order to secure and diversify energy supplies. This is motivated by the fact that Ukraine is a key transit country for oil and gas supplies, with 40% of the EU's natural gas imports crossing the Ukraine network. EU and Ukraine are therefore considerably stepping up their cooperation in the field of energy, as is testified by the "Memorandum of Understanding (MoU) on cooperation in the field of energy between Ukraine and the EU" that was signed at the EU-Ukraine Summit of 1 December 2005. The MoU defines *four specific areas of action*: i) nuclear safety of operating Ukrainian nuclear power plants, ii) the integration of

electricity and gas markets, iii) enhancing the security of energy supplies and the transit of hydrocarbons and iv) enhancing the effectiveness, safety and environmental standards in the coal sector. Energy-related cooperation will be a key component of the EC's assistance strategy to Ukraine under the regional as well as the national allocation for Ukraine. Support will also be given to improve energy efficiency and measures to tackle climate change and to promote new or renewable energy sources.

Certain activities have been carried out towards fulfilling the objectives set out in the Memorandum. In September 2006 an agreement was reached on the principle of mobilising funds from the EIB and EBRD to help support Ukraine's energy sector integration through appropriate investments, including in particular to install gas and oil metering stations at Ukraine's borders, partly aiming at improving market transparency, and upgrading the existing transit infrastructure. Ukraine has also taken measures to establish minimum oil stocks in order to enhance security of supply.

Another important development is the commitment of successive Ukrainian governments to reverse the flow of the Odessa-Brody pipeline in the south-north direction as it was originally conceived. This should allow in future increased flow of hydrocarbons from the Caspian region, in the framework of the EU's policy of diversifying its oil supplies. An EU-Ukraine-Poland Working Group is currently examining, with the EU's financial assistance, the possibility of the extension of this important oil pipeline to Poland. Technical assistance is also planned to analyze the reform options for the operation system of Ukraine's gas transit network. Progress is also being made on integration of Ukraine's electricity and gas networks and systems with those of the EU. In November 2006 Ukraine became an observer in the Energy Community Treaty. It has since applied for full membership of this Treaty, under which participants commit themselves to implement the *acquis communautaire* on energy. In order to help combat climate change, a working group on climate change has been set up that focuses on the implementation of the Kyoto Protocol. The need to improve energy efficiency in Ukraine has also been reinforced by changes in the terms and conditions that govern the supply and transit of natural gas from Russia and Central Asia. In this context the Memorandum of Understanding on energy foresees cooperation to improve energy efficiency as well as to develop alternative sources of energy, which should have benefits in terms of security of energy supply as well as of the global environment.

In July 1999, the European Atomic Energy Community and Ukraine signed agreements on cooperation in the fields of nuclear safety and controlled thermonuclear fusion. The Euratom-Ukraine Agreement for Cooperation on the Peaceful Uses of Nuclear Energy entered into force on 1 September 2006. Progress needs to be made on enhancing nuclear safety, as agreed in the Euratom and EBRD loan contracts with Ukraine; including completion of the projects at the Chernobyl site, paying particular attention to the development of a comprehensive nuclear waste management strategy; and further strengthening the independence of the Nuclear Regulator and providing it with adequate resources to discharge its tasks.

EU is the largest contributor to the Chernobyl Shelter Fund (CSF) managed by EBRD. The Commission is following closely the events related to the conversion of the site to make it environmentally safe, especially the contracting and construction of the main piece of equipment, the New Safety Confinement. The contracts for Interim

Spent Fuel Storage Facility and for New Safe Confinement for the Chernobyl unit 4 were signed in September 2007.

### **Recommendations pertaining to Environmental Management (excl. energy)**

Institutional development in the environment field: Support implementation of the National Environmental Policy of Ukraine, and support strengthening of the planning and implementation capacity of the Ministry of Environmental Protection.

Harmonize environmental legislation: Support national efforts to harmonize national legislation with EU legislation in the environmental sphere.

Environmental risks reduction and nuclear safety: Support efforts to minimize the impacts of the Chernobyl nuclear accident, including taking the Chernobyl plant out of use and transforming the sarcophagus into an ecologically safe system. Support national strategy formulation and implementation of radioactive waste management.

Sustainable natural resource management: Support efforts to use key natural resources (water, soils, minerals, energy) sustainably by implementing cost-effective policy instruments including regulation and market-based incentives.

Environmental monitoring and audit: support environmental management and audit system in line with European EMAS regulation, coordinated with European requirements and standards (ISO 19011 and 14000).

Increase pollution control: Implement a system of air and water pollution control, harmonized with EU standards and procedures, license-issuing policies etc.

Enhance solid waste management and sanitation: support development and implementation of modern laws and regulations for solid waste management and cost-effective sanitation services provision

Environmental education: Support broad-based environmental education targeted at youth, and key civil society actors, and leading state institutions, specifically implement a system of professional training for administrators (state workers and managers) who are responsible for environmental management, planning, analysis, and decision-making in the environmental policy field.

International environmental agreements: support implementation of International environmental agreements to which Ukraine is a party.

### **Recommendations pertaining to Sustainable Energy Use**

General: (i) Concentrate on improving energy efficiency; (ii) eliminate subsidies and cross-subsidies in the energy sector and ensure that tariffs cover costs, including capital investment. Simultaneously introduce targeted social measures to protect the most vulnerable households against price increases; increase the independence of the National Electricity Regulatory Commission; (iii) enhance co-operation between

government institutions working on energy and related environmental, social and macroeconomic issues; (iv) enhance competition and improve transparency in the energy sector to promote corporate efficiency; (v) ensure that the Ukrainian energy strategy is based on solid energy data, economic models and demand projections; (vi) shift the analytical focus from energy supply to demand to improve the Energy Strategy of Ukraine to 2030 and other energy sector programs; (vii) support improved statistics, particularly on energy consumption, by providing technical and economic support for the offices engaged in data collection and publication and by adopting international statistical methodologies.

Increase energy efficiency: support price reform that ensures prices cover the full, long-term cost of energy supply. Help ease the pain of rising energy prices by investing in energy-efficiency measures in low-income households; (ii) provide staff and funding for the new National Agency on Efficient Energy Use. Ensure that this Agency has continued high-level support that reflects the importance of its mission; (iii) develop and implement energy-efficiency standards for equipment and buildings rather than relying on normative use of energy per unit of output and its associated penalties; economic incentives (taxes, fees, levies etc.) to promote energy efficiency; (iv) support incentives for efficient energy use at state-owned enterprises through performance-based contracts for enterprise management; (v) support dialogue between the government and major energy consumers through voluntary agreements; (vi) use monitoring and evaluation as tools to understand the benefits and impacts of energy-efficiency policies and programs, and to expand and replicate the most successful programs.

Sustainable use of natural gas and oil: (i) based on the lessons learned from government interventions on the oil product market, support use of market-based approaches; (ii) use regulation to enhance competition and efficiency; streamline licensing and permit processes to make them more predictable, and use transparent, competitive tender procedures for exploration licences; (iii) support improved taxation and other revenue-sharing terms and conditions; (iv) facilitate development of a strategy for enhancing competition in the domestic gas market.

Enhance Energy Transit: (i) Ensure that future investments in transit infrastructure involve commercial partners and are, thus, driven by market demand; (ii) facilitate reduced administrative and fiscal barriers in order to increase oil transit through Ukraine; (iii) improve transparency of other operators to strengthen investors' confidence; (iv) support steps which may attract investors to gas transport and storage projects; (v) continue efforts to sell storage services and optimise use of excess storage capacity.

Sustainable and Efficient Coal Use: (i) enhance oversight of transactions at state-owned mines and establish auctions for coal and coal products; (ii) facilitate phase out of subsidies for coal production and capital investments; (iii) redirect some of the funds to address social and environmental consequences of mine closure; (iv) strengthen environmental regulations and enforcement pertaining to coal use and consider using royalties to establish a fund to pay for environmental remediation after mine closure; (v) improve management of coal reforms and of financial outlays related to the reforms.

Electricity: (i) consolidate efforts to develop the electricity market; (ii) reduce barriers to competition; specifically, un-bundle power generation and distribution to allow the market to function as intended; consider reinvigorating a transparent and competitive privatization process to encourage new investment and enhance sector efficiency; (iii) ensure nuclear safety including ecologically safe waste treatment and decommissioning.

Develop Renewable Energy: (i) Facilitate development of renewable energy in areas where they have a competitive advantage (e.g. biomass); (ii) support efforts to create a level playing field for renewable energy by removing subsidies and cross-subsidies for fossil fuels; (iii) facilitate access to financing for potential developers and users of renewable energy sources; (iv) support development of policies which facilitate entry of renewable energy on the energy market through fiscal incentives, increased awareness, improved regulations for renewable energy planning and integration into energy systems etc.

Enhance Environmental safety of Energy use: (i) ensure that environmental assessments and issues are more thoroughly incorporated into energy policy; (ii) take full advantage of opportunities offered by the Kyoto Protocol. (iii) focus on the most polluted areas where the population is directly affected by poor air quality; (iv) support government and power sector representatives to jointly develop effective strategies on modernising and improving the efficiency of energy production to reduce environmental degradation; (v) facilitate emissions reductions where it is most cost effective (e.g. energy efficiency, district heating, renewable energy); (vi) support use of environmental audits of large power plants as a means of encouraging companies to capture cost-effective opportunities to improve efficiency and reduce emissions; (vii) facilitate internalization of a larger portion of the environmental costs of energy production into energy prices.