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POLICY PAPER

An overview of the development of policy in the field of Energy Efficiency in Ukraine

(2014 review and update)

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INDEX

POLICY PAPER:

An overview of current developments of policy in the field of Energy Efficiency in Ukraine

With this Policy Paper EUEA will provide an update to the 2012 overview of Ukraine's policy on Energy Efficiency (EE) and make a snapshot of what is the current state of affairs in this sector. We will also include references of studies and published papers which should be considered as guidelines for Policy Makers in Ukraine, as well a good overview assessment for international experts. This paper is part of a project supported by the British Embassy called "Ukraine's Sustainable Energy Future – challenges and opportunities".

1. BACKGROUND

Ukraine has tremendous potential for energy efficiency. It is one of the most energy intensive countries in the world, even more so than energy-rich Russia. In fact, the only countries with more energy intensive economies are the oil producers of the Middle East.

IEA's 2012 review puts Ukrainian Energy Efficiency potential at approx. 20-30% of the energy supply. It is therefore clear that Energy Efficiency in Ukraine should be one of the most pressing issues on the Government's agenda. However, improvements in the last decade or more have been hardly perceived and energy intensity and use remain high and wasteful respectively. Energy efficiency improvement in households, businesses and State authorities have been lacking behind, especially if compared to neighbouring countries or to the international scale in general.

Ukraine first passed a law on energy conservation in 1994. However, funding for energy efficiency and a willingness to dedicate high-level attention to the issue have not always matched the scope of the problem.

There are several **barriers** which prevent moving in the right direction efficiently and effectively: *energy prices* are low and do not cover the full, long-term costs of energy supply; *excessive market regulation*, through excessive subsidies to achieve social policy, and the state ownership of the supply side; the lack of legislative changes, not providing the necessary incentives for investments in energy saving and energy efficiency technologies; *lack of promotion* of energy efficient tools, technologies, behaviour coupled with the misinformation of the public related to the future energy costs; lack of financing... All of the above are contingent to the development of energy efficiency or energy saving in Ukraine and will eventually need to be addressed in a consistent policy framework that will aim at increasing energy efficiency.

Such obstacles towards accelerating the introduction of energy efficiency have been incorporated in the strategic policy design which came about in 2005 with Ukraine's crude awakening to the reality of having to pay world market prices for energy resources. At that time, the import price of natural gas, the main primary fuel used in Ukraine, increased by 50%.

Up to 2005, substantially low energy prices failed to provide any stimulus for an efficient use of energy resources. This situation rendered null and void the implementation of government-led energy saving measures.

After 2005, the increased growth of world prices for energy resources had a direct impact on the prices of primary energy resources imported into Ukraine (mainly oil and gas) as well as on those domestically produced (coal). For example, the import price for natural gas has grown 3.6 times between 2005 and 2008, while the price for thermal coal grew two-fold. Higher prices for primary

energy resources fed into the prices for electricity and heat: the wholesale-market price for electricity rose from UAH 140 to UAH 313 per MWh or over 2 times in the same period.

Seeking to raise the effectiveness of the government policy on energy, a National Agency of Ukraine on Energy Resources Efficient Use (NAER), currently also referred to as SAEE, was created in 2005 and was vested with a wider mandate than its predecessor, the State Committee on Energy Saving. Amongst its first tasks, SAEE sought to: 1) strengthen the administrative and financial government resources to penalize excessive energy consumption, 2) introduce compulsory metering of consumer energy resources, 3) promote the introduction of co-generation plants to maximise the efficiency of heat generation processes, and 4) promote the use of alternative and renewable energy sources.

Ukraine's primary energy consumption is approximately 118 million tons of oil equivalent (toe) in 2010: 32,4% of electric power was consumed by the enterprises of processing industry, 11,1% – by the enterprises of mining industry, 22,5% - by population, 13,6 % - by the enterprises which are producing and distributing electric power, gas and water, 2% - by the agricultural enterprises, hunting enterprises, forestry and fishing, 6,3% - by transport and communication, 0,7% - by construction enterprises, 11,4% - by enterprises of other types of activity.

In the past two decades the country's total primary consumption and its energy intensity have been developing with economic growth, while energy efficiency – as measured by energy intensity – was strongly affected by structural changes in the economy at the beginning of the 90's and high volatility of gross domestic product growth during the period of economic recovery and subsequent world economic crisis. While energy intensity decreased by 20% in the past two decades there is strong indication that this was the result of reduced economic activity rather than a concentrated effort to approach and combat the issue.

Ukraine is as much as 3.8 times as energy intensive as its neighbouring EU-27 Member States. Moreover, Ukraine has one of the largest energy intensities, and therefore lowest energy efficiency, compared to other developing regions in Asia and CIS countries. The potential of Ukraine's energy intensity reduction potential can go as high as 75% compared to the EU average.

Ukraine's energy mix is mainly covered by fossil fuels (oil 10%; natural gas 40%; coal 31%), followed by nuclear energy (17%) and hydroelectricity (2%) while renewable energies still finds little space, showing one of the most carbon-intensive economies in the world and a significant pressure on the environment and the country's possible future fulfilment of eventual carbon reduction obligation agreements. Furthermore, considering its reliance on external sources of supply, import dependence can cause threats to energy security. Hydro contributed 2% to TPES, with only marginal supply amounts from other renewable energy sources. However, as reliable data on heat production from renewable sources is difficult to collect and as official statistics may underestimate real consumption of biomass products, the share of renewable energy in the primary energy mix might be slightly higher.[1]

Primary energy consumption heavily relies on imports to meet the country's energy requirements. Ukraine currently imports 78% and 73% of its primary oil and gas consumption respectively. Sources of gas imports are Russia and Central Asian countries. The Russian Federation is also the main source of fuel rods for Ukrainian nuclear power plants.

Coal remains the Country's main domestic energy resource, but its potential is constrained by political considerations (sizable workforce, state ownership, price subsidization) as well as environmental problems. Electricity is largely generated by nuclear power plants (50% of total generation) complemented by conventional fossil fuel thermal power plants (46%) and several

[1] IEA – Ukraine 2012 – Energy Policies beyond IEA countries, p.16

cascades of hydroelectric plants and pump storages. District heating for the provision of heat and hot water is widely used throughout Ukraine. This sector, driven by seasonal demand, mainly relies on natural gas.

Hence, improved energy efficiency would offer great economic benefits for Ukraine on a sector, regional and national level.

Overall, should Ukraine increase its energy efficiency to EU standards, it would benefit from a potential saving of 27 Mtoe equivalent to approximately EUR 12 Bln at 2010 prices (source: German Advisory Group on Enerdata Global Energy Statistical Yearbook 2011).

Ukraine's economy remains one of the most energy-intensive in the region, despite progress in energy efficiency in the industry sector and closure of some of the most energy intensive industries in the 1990s. Ukraine's energy intensity, i.e. the ratio of TPES to GDP, is ten times more than the OECD average (in purchasing power parity terms – 3.2 times more than the OECD average). While the situation improved notably during the 2000s when GDP growth was 1.5 times higher than energy demand, there has been deterioration in the broad energy intensity indicator in recent years (Figure 2.5). This TPES to GDP ratio may nonetheless be more favourable than indicated if the value of the shadow economy is taken into account. Ministry of Economy estimates for value creation not represented in official data are 34% of Ukraine's GDP in 2012.[2]

Considering the regional level, the **lowest energy efficiency ratings are currently registered in the highly populated industrial regions of Ukraine such as Lugansk, Poltava, Dnipropetrovsk and Donetsk,** featuring energy intensive steel, chemical and mining industries, and energy production.

Heavy industry, residential property, utilities and the power sector have the lowest energy efficiency ratings and therefore the largest potential for increased energy efficiency. In brief, these sectors largely rely on outdated technologies along the entire value chain. This is partially a reflection of State interference in ownership and pricing in such industries which also reduce competitiveness. As a matter of fact, wasteful use of resources and lack of implementation of energy efficient measures is only one aspect of non-competitiveness that characterizes large chunks of companies in the mentioned sectors.

In detail, the ***Industrial*** sector, accounting for 45% of primary energy use, is the key source of inefficiency with an extreme level of deterioration of production assets and insufficient implementation of modern technologies. As an example, the steel industry in Ukraine consumes as much as twice more energy than steel industries in developed economies (Global Energy Efficiency report, 2011). Also, the absence of automated systems and monitoring devices is seen as a major source of low energy efficiency.

The ***Residential Property*** **sector** is responsible for 30% of primary energy in Ukraine (including utilities such as heat and power companies). Energy intensity is particularly evident in central district heating systems, operated with outdated and poorly insulated distribution networks. Small and medium sized boilers also feature low efficiency factors and are on average older than 20 years. Consequently, multi-flat residential buildings consume approximately 40% of the country's heat energy resources. Estimation shows that fuel consumption in the heat sector could be reduced by up to 30% by simply improving equipment such as boilers, pipes, pumps and valves. Another reason for low energy efficiency in the residential sector is the low number of residential buildings that are equipped with individual heat metering and regulation devices. In other words, not being able to control heat consumption creates a huge barrier for households to save heating energy.

[2] Interfax Ukraine, 21 August 2012, "Economy Ministry: Level of Shadow Economy in Ukraine Grows by 0.4% in the first quarter of 2012"

Inefficiency in the ***Power Generation*** sector can be attributed to the continuing deterioration of the technical and auxiliary equipment, the low quality and high ash content of coal, non-optimal modes of electricity production and distribution, as well as insufficient financing for capital investments. Moreover electricity losses in the grid account for approximately 15% of the total generation in 2006.

The sources of inefficiency in the ***Transport*** **sector** can be attributed to high deterioration of the existing hauling stock, the non-optimal modes of cargo and passenger traffic, as well as the low quality of the road network.

In conclusion, wasteful energy use is present across the entire Ukrainian economy. The industrial sector is one of the largest consumers of energy, followed by the residential property sector. While technical factors differ from one sector to another, all sectors are characterized by outdated production technologies and a lack of investment.

A more efficient use of energy resources by the national economy and the population is of vital importance for Ukraine not only in the context of maintaining the competitiveness of its export-oriented economy, but also towards improving the security of energy supplies and providing for sustainable social and economic growth.

The efforts aimed to increase energy efficiency can succeed only under the condition of a government-driven energy efficiency policy that cuts through all areas of the national economy from local to national and brings together administrative, legal, regulatory and financial measures with economic stimulation.

2. ENERGY EFFICIENCY POLICY DEVELOPMENT – AN OVERVIEW

In 1994 the first integrated policy on energy efficiency with the adoption of a law "On Energy Saving" was launched. Given the economic recession at that time, the main policy focus has been placed on energy saving. Consequently, In 1995, sever bodies have been established:

- The State Committee of Ukraine on Energy Saving acting as a central executive body responsible for the implementation of the state policy on energy saving;
- The State Energy Saving Inspectorate acting as a government agency for controlling the efficient use of energy resources.

In 1997, the Government of Ukraine approved the main nation-wide programmes on energy saving:

- The State Comprehensive Programme on Energy Saving (SCPES);
- The Programme for State Support to Unconventional and Renewable Energy Sources and Smaller Hydraulic and Thermal Power Energy Sector.

In 2000 and 2001, the laws on "Alternative Types of Liquid and Gas Fuel" and "On Alternative Energy Resources" were adopted.

The 2005 increase in natural gas prices - the main source for high-energy-consuming sectors such as steel and cement manufacturing, the chemical, and district heating – urged the Government to review its energy efficiency policy, intensifying its efforts into setting new priorities and shifting from energy saving to energy efficiency targets.

New targets in energy efficiency policy required institutional changes at government level. As a consequence, the Decree of the President of Ukraine No. 678/2005 dd. 20 April, 2005 dismissed the

State Committee of Ukraine on Energy Saving and its functions were transferred to the Ministry of Fuel and Energy of Ukraine.

The Government then became aware of the potential conflicts of interest arising from entrusting the management of the energy sector and the implementation of an energy efficiency policy to the same office. Accordingly, the Order of the President of Ukraine No. 1900 dd. 31 December 2005 established a Government Agency responsible for energy efficiency: the National Agency of Ukraine on Energy Resources Efficient Use (NAER), currently referred to as State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE).

According to its mandate, SAEE is the national government body responsible for energy efficiency policy. It coordinates the actions of relevant sector ministries, departments and local executive bodies implementing energy efficiency policies.

In July 2007, the Parliament adopted the Law "On Amendments to Regulations of Ukraine on Energy Efficiency Stimulation" aiming at the practical application of mechanisms for economic stimulation of energy efficiency provided by the Law of Ukraine “On Energy Saving” and at tightening administrative responsibility for violation of laws on energy saving and energy efficiency.

Thus, Ukrainian national energy efficiency policy development can roughly be divided into two stages:

- A period of moderate growth of prices for domestic energy resources and relatively steady prices for imported energy resources (1994-2004), during which the policy was mainly focused on energy saving, the development and implementation of which was entrusted to the State Committee of Ukraine on Energy Saving;
- The second period, which started in 2005, saw fast and steep rises in the prices for energy resources, leading to a rethinking of a national policy on energy efficiency, measures, aims and outputs of which are still being developed. Energy efficiency policy is determined by laws and regulations drawn by SAEE and submitted for coordination with other State Bodies and for consideration to the Government.

In 2006, the Government approved Ukraine’s Energy Strategy until 2030 targeting, among other things, reduced rated fuel and energy consumption in a mid-term perspective to reach current EU rate of the energy intensity till 2030. However such Strategy saw a lot of criticism arising for several issues such as a lack of intermediary / mid-term objectives, lack of coherence and overall difficult understanding of its overall development from international institutions and donors.

Currently the Government of Ukraine, under the supervision of the Ministry of Energy and with the help of external consultants, is developing a New Energy Strategy to 2030, for which a Draft has already been published and distributed in June 2012. A first impression suggests there is an overall lack of prioritization of Energy Efficiency measures and implementation and an everlasting dominion of fossil fuel developments such as coal and Nuclear.

3. INSTITUTIONS

The institutional framework for energy policy has been reorganised in recent years with the Cabinet of Ministers designated as the ultimate decision-making body. The Cabinet of Ministers is the institutional body responsible for policy co-ordination and oversight of state energy companies. Energy policy is high on its political agenda with the parliament and the president also involved in the

decision-making process. The main national level institutions with energy policy responsibilities include:

- The Ministry of Energy and Coal Industry is responsible for most energy supply policies and for co-ordinating energy policy across government and providing advice to parliament.
- The Ministry of Ecology and Natural Resources is responsible for licensing and production - sharing agreements for hydrocarbon development and for climate change policy. The co-ordination and implementation of all climate policy-related measures defined by this ministry falls under the responsibility of the State Environmental Investment Agency of Ukraine which also has overall responsibility for implementation of the provisions of the Kyoto Protocol and the UNFCC Convention.
- The Ministry of Finance is responsible for taxation relevant to the energy sector. The Ministry of Economy and Trade Development is the lead for energy efficiency policies, but responsibilities for energy efficiency policies are shared among numerous ministries and agencies.
- The State Agency on Energy Efficiency and Energy Saving (SAEE) is a central executive authority directed and coordinated by the Cabinet of Ministers of Ukraine through the agency of the Minister of Economic Development and Trade of Ukraine has the role of advancing energy efficiency and promoting the deployment of renewable energy sources. The SAEE is mandated to provide policy proposals to the minister on efficient use of fuel and energy resources, energy saving, renewable energy sources and alternative fuels, as well as to ensure the implementation thereof. It has the authority to develop and approve the state, industrial and regional purpose-oriented programmes on the efficient use of energy resources, energy saving, renewable energy sources and alternative fuels. It is empowered to exercise control over the implementation of complementary state programmes.[3]
- The Ministry of Regional Development, Construction and Housing of Ukraine develops policy and programmes relevant at local levels.
- The National Commission for State Energy Regulation (NERC) supervises the natural gas and electricity markets.
- The Anti-Monopoly Committee is responsible to prevent excessive concentration of market power.
- The State Nuclear Regulatory Inspectorate has regulatory responsibility for the operation of nuclear facilities including uranium mining, radioactive waste storage and decommissioning at Chernobyl.

4. RELEVANT POLICIES IN DEVELOPMENT

4.1 New Draft Energy Strategy to 2030

The Energy Strategy of Ukraine till 2030, adopted in 2006, is supposed to be updated every five years. In summer 2011 the President entrusted the government with a task of updating the Strategy. The Ministry of Energy and Coal Industry of Ukraine was appointed as designated authority. Each chapter of the Strategy is developed by a certain institution. After that the proposed amendments are considered at the session of the Ministry of Energy.

[3] Energy Charter Secretariat - "In-depth review of the Energy Efficiency Policy of Ukraine", 2013

Updating the Strategy is currently a pending issue although it was supposed to be submitted to Cabinet of Ministers in July 2012. In June 2012, the Ministry of Energy and Coal Industry of Ukraine published the updated draft Energy Strategy of Ukraine till 2030 on its web-site, and this aroused a heated discussion among specialists in the energy sphere.

It is a well known fact that Ukraine consumes too much energy, the highest consumption in Europe and most probably within OECD countries. Therefore the uppermost priority in this strategy ought to be the promotion of Energy Efficiency (and Renewables), above all else. This will not only contribute to reduced imports but also translate into healthy environment and huge savings which help the economy as well. However, it is surprising to notice that the new draft strategy outlook does not set a clear path to EE, with specific actions and targets. Ukraine has international treaty commitments which require them to achieve high targets (10-15%) of energy efficiency and renewable generation and this cannot be achieved without a huge boost in that direction.

Energy Efficiency initially gives the impression of being an important priority on which the review of the 2006 Strategy would be based. However no best practices seem to be taken into account, no EE programme is described or detailed with concrete means to reach targets, no real national behavioural change is undertaken and only a marginal improvement in transportation is considered. "*Implementation of the Energy Strategy provisions shall ensure the achievement of (among others) Implementation of the comprehensive energy efficiency programmes aimed at cutting specific energy consumption in the national economy by 30-35% until 2030*"[4]. However no application of such programmes can be found in the projections.
Given its notorious levels of intensity, Ukraine should make EE its most important priority and highlight it in the new reviewed Strategy.

When taking a closer look at the contents of the draft Strategy, it is clear that there are two major priorities that overshadow all others: (i) to cut down imports and boost internal production of energy (in order to demonstrate Ukraine's intention to become more energy-independent and to increase security), and (ii) to further develop fossil fuels (2010-2030: +82%) and Nuclear production (2010-2030: +49%).
It is therefore surprising to find out that "*Given the current state in this sector, under any scenario of the energy demand growth the energy sector of Ukraine has the following priorities in order to assure the growth of the country economy*". Among such priorities we find "***develop renewable sources***". From the available data in the tables presented, the highest share of RES is in the Worst Case Scenario, and amounts to 1,88% of Total Supply (239 Mln TCE) in 2030.

The Energy Efficiency chapter should be the first one discussed in the Strategy and should be a horizontal issue that touches each and every aspect of the strategy (whether by fuel, sector, technological improvement or activity).

Energy Efficiency, rather than a concrete science with objectives to be reached and a clear path to reaching them, appears to be considered as a non-reality and is thus not entirely considered within the draft Strategy.
In conclusion, EE has not been prioritized as it should have been. Far from it.

Should you want to have a more in depth review of the Energy Strategy to 2030, you may read EUEA Position Paper at: http://euea-energyagency.org/show_news.php?id=625&lang=en

[4] P.6 Draft Ukraine Energy Strategy to 2030

4.2 Energy Community Treaty

On 24 September 2010 Ukraine joined The Energy Community Treaty (ECT) and on 1 February 2011 became a full member of Energy Community (EnC). By signing the Treaty, Ukraine committed itself to implement the relevant acquis, to develop an adequate regulatory framework and to liberalize its energy market in line with the acquis under the Treaty. Ukraine's entry into this international organization will provide an excellent opportunity to start reforms required in its energy sector.

The Energy Community focuses its activities on the ground of concrete acquis in the areas of electricity, gas, environment, energy efficiency, renewable energy sources, competition and security of supply. In addition, it is planned to further extend the acquis in statistics and oil stocks.

As a member of the **European Energy Community**, Ukraine has to implement the energy chapter of the EU *aquis communitaire*, including DIRECTIVE 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market, setting a 12% target for increase of the share of energy derived from renewable sources until 2020. At the same time, this document has been amended by Directive 2009/28/EC, based on which European countries have even increased this target up to 20% by 2020.

Today, the Energy Community Contracting Parties have to transpose following directives into their legislations:

- **Directive 2006/32/EC** on energy end-use efficiency and energy services, and repealing Council Directive 93/76/EEC (transposition deadline: 31 December 2011)
- **Directive 2010/31/EC** on energy performance of buildings (transposition deadline: 30 September 2012)
- **Directive 2010/30/EC** on the indication by labeling and standard product information of the consumption of energy and other resources by energy-related products (framework directive, transposition deadline: 31 December 2011) as well as set of implementing regulation for separate appliances (transposition deadline: 31 December 2012) [5].

For different countries, the implementation schedule for directives varies, but eventually it is obligatory for all parties. The Directives deal with the issues of energy efficiency in energy end use sectors and energy services, promotion of energy performance of buildings and labeling of energy related products, including energy labeling of household appliances. Ukraine has been delaying in the presentation of its National Energy Efficiency Action Plan (NEEAP), as well as implementation of two above mentioned directives for which transposition deadline expired in December 2011.

At this stage it is necessary to:

a) Present the National Action Plan on Energy Efficiency to the Energy Community Secretariat;
b) Develop a road map for implementation of Energy Efficiency Directives;
c) Adopt the Law on Energy Efficiency of Ukraine and prioritize energy efficiency, making surely it corresponds to Energy Efficiency Acquis, as well as major national energy related laws, including Energy Strategy of Ukraine;
d) Adopt timely the Law on Energy Efficiency in Buildings that should transpose Directive on energy performance on buildings.
e) Eliminate consumer price backing as a negative factor hindering the implementation of energy efficiency measures, while developing a security net for vulnerable consumers.

[5] For more concrete information, please, see Decision of the Energy Community Ministerial Council No 2010/02/MC-EnC , No. 2009/05/MC-EnC and No. 2011/03/MC-EnC, available under: http://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/Decisions

4.3 National Energy Efficiency Action Plan (NEEAP)

In accordance with the Energy Community Treaty, Ukraine is to develop and implement a National Energy Efficiency Action Plans (NEEAP) as required by the Energy Community Ministerial Council Decision D/2009/05/MC-EnC of 18 December 2009 on the implementation of certain Directives on Energy Efficiency, with respect to Directive 2006/32/EC on energy end-use efficiency and energy services.

The Action Plan essentially represents a practical demonstration of the commitment of Contracting Parties to energy efficiency. However, they will only be effective if they are translated into real action on the ground.

A successful Action Plan would place energy efficiency policy firmly within the broader policy context, it would prioritise resource allocation across the entire energy efficiency portfolio, it would ensure that synergies between policies are captured and duplication avoided, and that clear responsibilities for implementation is allocated. A successful Action Plan would raise consumers' awareness of the benefits of energy efficiency and are empowered to make informed choices. Considering its great potential for stimulating market uptake and development of more energy efficient products and services, the exemplary role of public procurement should also be considerably strengthened in the NEEAPs.

In November 2013, SAEE publically presented it Draft NEEAP to 2020. The reporting period of NEEAP for Ukraine to achieve the estimated goal according to the Directive is from 2012 to 2020. The main objective is to ensure a minimum planned energy saving of 9% of final domestic energy consumption for the last statistically available period (2005-2009) by 2020.
The first NEEAP sets an interim indicative target within three years of the implementation period in amount of 2% of domestic target consumption of energy. The above mentioned purpose does not apply to energy consumers covered by the Directive 2003/87/EC, which establishes a scheme of emissions trading of greenhouse gases emissions in the Community (the ETD), as well as end consumers in the areas of air and inland waterway transportation.In order to achieve the goal, aggregated and individual data on energy consumption were used. These data were provided by the State Statistics Service of Ukraine. Used indicators of energy balance do not differ from the data provided by the Eurostat.
In the course of implementation of the Plan, Ukraine should also introduce efficient normative, taxation, financial and organizational measures for the overall implementation and fulfilment of the Directive.
Implementation of measures necessary to achieve the indicative objective requires mobilization of significant financial resources, enhancing of energy efficiency measures planned by the State, and further liberalization of the energy market, particularly in terms of offering of energy services, as well as development of public-private partnerships in the field of energy efficiency.

The main concerns that have so far been raised by several local and international experts, are the reliability of the numbers projected within the NEEAP (as opposed to those included in the Energy Strategy to 2030) as well as the weak objectives set by Ukraine (9%, representing the minimum as per the EnCoT), which could have used this opportunity to show its commitment to improving its energy situation.

4.4 Energy Efficiency Programme 2010-2015

The State Target Economic Programme of Energy Efficiency and development of energy production from Renewable Energy Sources and Alternative Fuels for 2010-2015 was approved by the Cabinet of Ministers of Ukraine on 01.03.2010 (№ 243) and amended on 25 January 2012.

The Programme is aimed at
- Creating the conditions for approaching the energy intensity of gross domestic product of Ukraine to the level of developed countries and the European Union standards;
- Reducing energy intensity of gross domestic product over the implementation period of the Program by 20% compared to 2008 (3.3%annually); increasing the efficiency of energy resources using and strengthen the competitiveness of the national economy;
- Optimizing the structure of the Ukrainian energy balance in which the share of energy generation from renewable energy sources (RES) and alternative fuels (AF) in 2015 will be not less than 10 percent, by reducing the share of imported fossil energy resources, particularly natural gas, and their replacement by alternative types of energy, including the secondary types of energy.

Several activities aimed at the renewable energy and AF development are expected to be realized within this Programme, in particular the construction of wind and solar energy generation units, installations for the production of biodiesel, bio ethanol and synthetic fuel, the restoration of small hydro power and construction of new facilities, the construction of facilities for solid biomass and biogas, the implementation of pilot projects for constructing of geothermal stations with an associated gas usage, among others.

Moreover, the Programme should reduce technological losses and non-energy losses, through the following actions:

- Upgrading and modernization of the energy-intensive equipment of manufacturing industry;
- Introduction of cogeneration technologies in enterprises of communal ownership in the thermal energy sphere;
- Implementation of technologies that include the use of heat pumps, electric heat storage heating and hot water for communal enterprises and for public institutions;
- Modernization of gas transportation system, equipment of thermal power plants, and CHP plants.

4.5 Concession Agreement[6]

Concession agreements provide a mechanism for making public infrastructure projects more competitive and effective without privatizing the projects. In contrast to a management agreement, under which the government pays the operator a fixed fee to operate the project, a concession agreement allows the operator to keep the profits it generates by building and managing the project, in exchange for paying concession fees to the government. This compensation structure incentivizes the concession holder to develop, operate and maintain the project efficiently.

To implement the Law of Ukraine *"On Particulars of Lease or Concession of the State-Owned Objects of the Fuel and Energy Sector"* dated 8 July 2012 and the Law of Ukraine *"On Particulars of Granting into Lease and Concession of the Objects of Centralized Water and Heat Supply and of Drainage System in Municipal Ownership"* dated 21 October 2012, the respective Ministries approved *the Procedure for Taking the Decision in respect of Lease or Concession of the Objects of the Fuel and*

[6] Avellum Partners: http://www.avellum.com/en/index/legalalerts/legislation_changes/217/

Energy Sector, which became effective on 8 June 2012 and *Recommendations on the Organization of Lease or Concession Tender in respect of the Objects of Centralized Water and Heat Supply and of Drainage System in Municipal Ownership* dated 3 April 2012 (the "**Concession Legislation**").

The concession procedure, clarified by the Concession Legislation, includes the following stages:

- Either the Ministry of Energy and Coal Industry of Ukraine (in respect of the state-owned objects of the fuel and energy sector) or the Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine (in respect of the objects of centralized water and heat supply and of drainage system) adopts the decision on concession;
- Organizational and technical preparations for concession;
- The Ministry of Energy and Coal Industry of Ukraine or the competent local authority notifies and organizes the concession tender;
- The parties negotiate the concession agreement and execute it.
- By its Resolution dated 11 January 2012 No. 71 the Cabinet of Ministers of Ukraine approved the List of the State-Owned Objects, Eligible for Concession, which currently includes 88 objects with coal mines prevailing.

5. Regulatory Framework

The cornerstones of the current regulatory framework for energy efficiency are the "Law On Energy Saving", the "Law on Alternative Energy Sources" and the "Law on Alternative Fuels", supported by various other regulations.

Contrary to the development of alternative energy sources the energy efficiency measures are weakly supported in national legislation. At the level of law only the Law of Ukraine "On Amendments of the Certain Legislative Acts of Ukraine in Regard to Promotion of the Energy Saving Measures" was adopted envisaging tax and duty preferences for import of the energy efficient equipment. But the list of such equipment is developed by the Cabinet of the Ministers manually without setting the stringent characteristics that made these provisions inefficient in practice.

However the general view is that the regulatory framework taken as a whole is insufficient to ensure effective regulation of the energy efficiency in Ukraine. In order to mitigate the gap in national legislation several draft laws were elaborated and registered in parliament: the most recent draft "On Effective Usage of Fuel and Energy Resources" (No. 6212 as of 19 March 2010) and the draft law "On Energy Efficiency" (No. 5016 as of 23 July 2009), both aim at establishing fundamental legal basis for energy efficiency, ensuring economic and organisational conditions for effective and money-saving usage of fuel and energy resources.

Unfortunately, these draft laws are mainly of a declarative character and need to be further improved. This concern in particular the establishment of basic national standards of energy resource usage, a measurement system for energy efficiency and more stringent economic sanctions for violation of energy efficiency than those set forth in the current version of the "Law on Energy Saving" (Integrites, 2010).[7]

[7] Text from German Advisory Group, Institute for Economic Research and Policy Consulting: "Towards higher energy efficiency in Ukraine: Reducing regulation and promoting energy efficiency improvements": http://www.beratergruppe-ukraine.de/download/Beraterpapiere/2012/PP_01_2012_en.pdf?PHPSESSID=00793134947aa9c71b19dcfe2faca160

5.1 Law on Energy Efficiency in Buildings[8]

On January 13, 2012, the **Draft Law** on "energy efficiency of residential and public buildings" was passed to the Parliament Committee on Construction, Urban Development and Regional Policy by the Cabinet of Ministers of Ukraine.
The urgency of this law draft is related to the adoption the Law of Ukraine "On ratification of the Protocol on Ukraine's accession to the Treaty establishing the Energy Community".
Although Ukraine is trying to abide to its commitments through the Energy Community Treaty by introducing EU regulations on energy, environment, competitive policy and renewable energy, the issue of energy efficiency of buildings remains legally unregulated in Ukraine.

In brief:

- Article 5 regulates the issue on public policy in the sphere of energy efficiency in buildings providing that, among other things, the outcome will be a reduction of carbon dioxide emissions in the atmosphere and construction of buildings will occur with a close to zero zero energy consumption index.
- The Draft Law provides minimal standards for energy efficiency in buildings. These minimal requirements for energy efficiency in buildings have to be approved every five years (Article 10).
- Through Article 16 the draft law envisages the issuance of energy efficiency **passports** to buildings. Passports will be placed in the Unified State Register of passports of energy efficiency of buildings, which should be open to public.
- The draft law also binds owners of buildings to ensure compliance with minimal building standards of energy efficiency which shall be made at the expense of owners. At the same time, the State will provide financial support through preferential credit funds or budget funding.
- The draft law also envisages administrative responsibility in the case of failure to comply with the legal norms in this sphere.

5.2 *Action Plan for the Regulatory Support to the Implementation of the Energy Efficient Heat Consumption Policy and Modernization of the Heat Supply Sector*

On 30 July 2012 the Cabinet of Ministers of Ukraine (N.588) approved the above Action Plan in support to the Transparent, Quality Operation and Investment Attractiveness of District Heating Enterprises.

The Action Plan consists of 20 actions aimed at reducing heat energy consumption, improving transportation and distribution of heat energy, modernizing District Heating companies, stimulating final user EE measures implementation, installing heat energy meters for both suppliers and consumers, etc., which, if fully implemented, should allow a reduction in heat energy losses between 10-15% and an overall reduction of energy consumption of approximately 50% in buildings.

According to various experts, the volume of investment required ranges to:
- Thermo-modernization of buildings: approx. UAH 150 bln.
- Upgrading equipment of District Heating companies, and infrastructure – approx. UAH 140 bln.

This will require a comprehensive approach, based on a mix of public-private financing.

[8] Expert Advisory Centre "Legal Analytics" (EACLA): http://legalanalytics.com.ua/en/component/content/article/94-energysaving.html

5.3 Metering of energy resources

Insufficient and inadequate metering of energy use is a major issue hampering progress on energy efficiency. This is further aggravated by the incomplete regulatory framework concerning metering equipment and its non-compliance with international and European standards.

Progress in this area has produced mixed results. The concepts for implementing metering systems in the electricity and gas wholesale markets have already been adopted, although their implementation is well behind schedule.

Nonetheless, households remain the most problematic area for the accounting of consumption of energy resources. According to the information provided by the State Energy Saving Inspectorate based on results of inspection of 532 sample multi-store blocks of flats in different regions of Ukraine during 2007, the level of introduction of metering devices was the following:

- cold water metering devices – 61,3%;
- hot water metering devices – 14,9%;
- heat energy metering devices – 47,5%.

According to the information provided by national gas and oil monopoly NAK 'Naftogas Ukrainy' as of mid-2007 only 51% of flats were equipped with gas meters.

Local budgets are supposed to provide the main source of funding for the installation of cold water, hot water and heat meters in households. The lack of appropriate financing has resulted in chronic underinvestment in the installation of meters.

SAEE has drafted and submitted for consideration to other ministries the draft law 'On accounting of resources supplied to individuals through network' aimed at making the suppliers of energy resources and water responsible for ensuring that all households are duly equipped with the relevant equipment by 01 January 2015.

5.4 District Heating

The District Heating sector[9] in Ukraine is in physical and financial crisis.

Countries in the region implemented policy reforms through effective changes to the legal and regulatory framework, enabling them to create independent regulators, raise tariffs to reflect full cost of service, involve the private sector and enable new investments. The introduction of heat metering at the building level was among the first steps in implementation of the investment programs. Ukraine has kept regulation, ownership and operation of District Heating (DH) companies in the hands of local governments, and kept tariffs well below the levels needed to provide good quality service.

Heat metering and Consumption based billing are important steps toward improving service, lowering household costs and improving the financial viability of DH companies. There are obvious tensions between the objectives of improving quality of service for customers, while keeping DH affordable. Tariffs would need to more than double to reflect the economic costs of heat production. A one-off tariff hike of this magnitude would make DH services unaffordable for most Ukrainian households at current consumption levels. The proposed solution is to reduce heat consumption by

[9] World Bank Report – "Modernization of the District Heating Systems in Ukraine: Heat Metering and Consumption-Based Billing", February 2012: http://siteresources.worldbank.org/UKRAINEINUKRAINIANEXTN/Resources/455680-1332179461564/UkraineDHreport2012e.pdf

50% to compensate for a doubling of prices, coupled with a targeted social safety net to protect the poor.

Additionally, a number of complementary institutional, legal and regulatory measures are required to support investments including:

- Complete de-politicization of the tariff regulation by passing responsibility to an independent sector regulator;
- Making DH companies clearly responsible for the financing, purchasing, installation, servicing of Individual Heat Substations (ITPs) and meters as well as reading of meters;
- Standardizing heat supply contracts. Heat supply contracts vary substantially across Ukraine. The language is often confusing, excessively detailed and, in some cases, contradictory;
- Fostering the creation of homeowners' associations (HOAs). DH companies prefer to have contracts with HOAs because they are legal entities with an organized administration.

Finally the financial support required includes:

- Targeted subsidies for poor customers. The Government could better serve poor customers by providing direct subsidies to the individual households, rather than to DH companies;
- Financing energy efficiency improvements. The Government could facilitate such investments through grant or concessional loan programs, funded or financed by donors.

5.5 Development of energy efficiency standards and marking of energy-using equipment

The development and introduction of national standards on energy efficiency is one of the major fields of SAEE activity. Currently, energy efficiency standards are developed by SAEE in cooperation with Gospotrebstandart[10] and specialised companies. In the future, these functions are planned to be entrusted solely to SAEE.

According to the Law of Ukraine "On Energy Efficiency", energy efficiency standards are mandatory and should replace the system of energy consumption norms.

The **labelling** (marking) is one of the main future trends of the government policy on energy efficiency. Currently, the marking of equipment remains an option for equipment manufacturers and suppliers. Certain success has been achieved in the marking of household appliances (standards for their energy efficiency have been developed and voluntary labelling is being performed). On the other hand, the marking of industrial energy-using equipment is not used at all.

For the purpose of introducing mandatory labelling of household appliances, SAEE has developed the Draft Technical Rules for Marking Household Electrical Appliances on the basis of EC Directive 92/75/EEC dd. 22/09/1992 on household appliances labelling and indication of energy and other resources consumption.

These Technical Rules will be mandatory for:

- Manufacturers and suppliers of such equipment;
- Companies importing such equipment to the customs territory of Ukraine.

Assessment of compliance to the labelling Rules and Standards will be performed by specially certified bodies with subsequent issue of Compliance Declaration. The commercialisation of unmarked equipment will no longer be possible. Inspection of compliance with household electrical appliances labelling will be performed by SAEE.

[10] The government agency responsible for standardization

6. INTERNATIONAL FINANCIAL SUPPORT AND PROGRAMMES

In general international financial support for investments in energy efficiency and energy savings in Ukraine are dispersed by the number of the small projects. The largest donors in this field are international financial organizations (IFI) that either support local initiatives as part of development programmes or develop own specific programmes for Ukraine. The initiatives aim at improving energy efficiency in small and medium sized (SME) industrial enterprises and local utilities and companies owned by municipalities.

Table 2
Major current international financial support programs in Ukraine in field of energy efficiency:

Provider of support	Current/planned program	Duration	Funding	Priorities
EU	Direct support of Ukrainian budget energy efficiency programmmes (through SAEE)	2011-2013	Total 70 Mln EUR: EUR 31 Mln (fixed) in Oct-2011; 32 Mln in variable tranches (2011-2013) + 7 Mln EUR for TA and grants	1. Policy Framework 2. Legislative Framework 3. Public Finance Management 4. EE Measures (energy balance, public awareness, access to financing, etc); 5. Policy Outcomes (reduction of energy intensity; reduction of losses)
EBRD	1. UkrESCO 2. Energy Alliance 3. UKEEP	1. Current 2. Current 3. Current	1. EUR 34 Mln 2. EUR 7 Mln 3. USD 105 Mln	1. Industrial SME 2. Co-generation equipment 3. Industrial SME
UNDP	Transforming the Market for Efficient Lightning	2010-2015	USD 31 Mln	Public entities and Residential buildings
USAid	Municipal Energy Reform Project (MERP)	Current	USD 13.5 million	support CE/EE and GHG emission reduction capacity building initiatives

The **EBRD** has the longest history of supporting energy efficiency projects in Ukraine. One of the first projects of the bank in this field was the establishment of so-called “Energy Service Companies”. UkrESCO (the network of service companies) and Energy Alliance used EBRD loans for investing in energy saving projects. The EBRD provided two tranches of loans amounting to USD 50 Mln in 1998 and again in 2005 for UkrESCO and USD 10 Mln for Energy Alliance in 2003.
While Energy Alliance used the EBRD loans to finance the purchases of co-generation equipment by Ukrainian companies, the UkrESCO successfully implemented 24 energy saving projects in different industries, primarily in the fields of co-generation, replacement of outdated equipment and modernisation of heat and cold supply systems.
The projects’ cost usually ranged between USD 200,000 and five million with project payback periods of 1-4 years (UNECE, 2010). Currently, the EBRD has extended two loans totalling EUR 34 Mln to finance government-backed UkrESCO, and a EUR 6.8 Mln loan to privately owned Energy Alliance.
One of the largest programmes of the EBRD in the field of energy efficiency is called:

Ukraine Energy Efficiency Programme (UKEEP) and is designed for providing loans and technical assistance for small and medium-sized companies through selected Ukrainian banks. As of March

2011, UKEEP has committed approx. USD 105 Mln to energy efficiency projects in various sectors. Also, the EBRD provided a number of significant loans to for energy efficiency projects in large industrial enterprises, power companies and public utilities supporting their efforts in modernizing outdated equipment.

The World Bank cooperates with Ukraine in the framework of several mechanisms, including the:

- *Carbon Partnership Facility* (with capitalization of USD 5 Bln) with its two structural units: Carbon Assets Development Fund and Carbon Fund,
- the *Climate Investment Funds* (Strategic Climate Fund and Clean Technology Fund)
- the *Energy Efficiency Project* which is a credit line with sub-lending through two national banks. The total amount of loans is USD 200 Mln which will be provided until March 2016 (WB, 2011).

The United States Agency for International Development (USAID) approved financing for energy efficiency projects in the Ukrainian industrial sector. However, due to restrictive requirement of USAID towards the applicants the uptake was low (UNECE, 2010).
Until last year, USAID assisted 36 municipalities across Ukraine with the *Municipal Heating Reform Project (MHRP)* which provided USD 16 Mln over three years.
USAid has recently started (September 2013) a new USD 13.5 Mln assistance project called "Municipal Energy Reform Project" aiming at supporting Clean Energy (CE) / EE and GHG emission reduction capacity-building initiatives, mostly in cooperation with Executive Governmental Agencies and local authorities.

The European Union started supporting to Ukrainian energy efficiency programmes only recently due to inconsistence of Ukrainian legislation to EU regulation. It was announced that Ukraine will receive the first tranche of financial assistance amounting to EUR 31 Mln in late-2011 for implementation of energy efficiency programmes - primarily in the public sector. Over the 2011-2013, Ukraine expects to receive further EUR 70 m in EU funds. Of these, EUR 63 Mln are to be spend on the energy efficiency programmes related to Budget Support targets and EUR 7 Mln on Complementary Support, including Technical Assistance to SAEE.

One TA project "Capacity Building of the State Agency for Energy Efficiency" for 3.2 Mln EURO has already been provided and has the objective of:

- Strengthening SAEE capacity for the design and implementation of national policies in respect of energy efficiency and renewable energy sources;
- Assist in the implementation of the Sector Policy Support Programme funded by the EU.

Moreover, the EU has provided SAEE with a Twinning project "Improvement of the Policy Framework in the Sphere of Energy Efficiency and its Approximation to the Requirements of the EU Legislation", 1.250 M EURO, aiming to harmonize selected national legislation in the field of energy efficiency with the relevant EU Acquis / standards in line with the Energy Community requirements. Alongside legislation, the project aims to strengthen the tools and mechanisms based on best-EU practice in order to maximize the impact of the new legislative framework.

Covenant of Mayors – is a self initiative of Mayors who commit to reduce CO2 emissions and their cities energy consumption by more than 20% by 2020. The regional project covering Ukraine consists of the (i) establishment of the Covenant of Mayors – EAST office to technically support the cities that have signed the covenant and (ii) use 2.5 Mln EURO grants to finance projects in signatory cities - up to 500 000 EUR by project.

Community base approach Phase II (EUR 17.1 million) is a project funded by the European Union and is co-financed and implemented by the United Nations Development Programme (UNDP). Citizens of 900 communities from all the regions of Ukraine will benefit from the extended CBA Project over the next four years. The programme will train and support local leaders and representatives of local authorities to develop democratic processes to decide their own community development needs and implement joint initiatives on improvement of their living conditions. Energy efficiency, water supply, environment, healthcare will continue to be the priority fields of support, and human resource development a cornerstone of the CBA programme.

The United Nations Development Programme is currently conducting a targeted project called "Transforming the Market for Efficient Lighting" aiming promoting new efficient lighting technologies and a gradual phase-out of inefficient lighting products in residential and public buildings. Total funding for the project is USD 31 Mln over the 2010–2015 period.

GIZ coordinates the German development cooperation with Ukraine on sustainable economic development, while the KfW Entwicklungsbank (KfW development bank) is responsible for spearheading the activities of the programme on enhancing energy efficiency.

The project "Energy efficiency in buildings" (2007-2013) is advising the Ukrainian Government on drawing up draft legislation to increase energy efficiency in the construction sector and on developing financial support programmes and incentive mechanisms for energy savings in buildings.
At the regional level the focus is on introducing energy management systems in the four pilot cities of Chernigov, Ivano-Frankivsk, Mirgorod and Novohrad-Volynskyi. To this end, regional energy managers are being trained, energy plans for buildings developed, monitoring systems established and sample renovation works arranged to demonstrate energy-saving measures.

NEFCO works closely with the State Agency for Energy Efficiency (SAEE) as well as the country's Ministry of Housing and Communal Facilities to implement energy efficiency and energy savings projects in the real estate sector.
NEFCO intends to finance several district heating projects under the E5P programme, and at the moment a project worth EUR 2.75 million is being planned with the municipal district heating company, Teplotransservice, to upgrade the heating system in Rivne, Western Ukraine. The investment is expected to reduce the consumption of natural gas by 1.3 million cubic meters a year and the payback period is estimated to be around 4 years.

The Swedish International Development Cooperation Agency (SIDA), together with NEFCO and Ukrainian authorities, has agreed to set up an investment programme aimed at promoting energy efficiency projects in Ukraine. The programme, which is called DemoUkraina, will receive SEK 35 million from the Swedish government via Sida, which will be used to finance local district heating projects. NEFCO, for its part, will administer the programme and, among other things, ensure cost and energy consumption efficiency by consulting and sourcing professional district heating expertise. According to the terms of the agreement, ten municipal district heating projects will be financed with grants from Sida and loans from NEFCO. The maximum loan and grant size for each project will be EUR 400,000 and EUR 300,000, respectively.

Eastern Europe Energy Efficiency and Environmental Partnership (E5P) is a €90 million multi-donor fund managed by the EBRD designed to promote energy efficiency investments in Ukraine and other eastern European countries and was set up under the initiative of the Swedish government during its presidency in the European Union in 2009. The fund will complement energy efficiency loans provided by financial institutions including the European Bank for Reconstruction and Development,

the European Investment Bank, the Nordic Investment Bank, the Nordic Environment Finance Corporation and the World Bank Group.
Grants under E5P will be allocated to four priority areas: district heating, other energy efficiency projects, environment projects in Ukraine as well as additional projects in other eastern European countries, but Ukraine is considered a key beneficiary of the fund. In addition to promoting energy efficiency in district heating projects, funding will also support other investments aimed at making substantial energy savings. Environmental projects, such as waste water or renewable energy, will also be within the scope of the grant funding.

International financial support therefore plays an important role as a source of funding for energy efficiency projects in Ukraine - especially for those sectors with limited access to financial markets (e.g. SME and public utilities companies). Additionally, international support often also entails knowledge transfer access to technical consulting.
However, despite the considerable investments provided, international support cannot replace functioning domestic markets and relieve the Ukrainian government from creating an environment that provides the incentives to invest in energy efficiency technology.

7. CONCLUSIONS

It is evident and undeniable that the level of energy consumption of Ukraine is higher than it could or should be, especially if compared to other neighbouring EU Member States.
To highlight the main barriers to improvement in EE in Ukraine one could say they are:
-Excessive market regulation
-Lack of technological improvement
-Lack of promotion and awareness-raising of energy efficiency measures and their application.

Part of its energy efficiency problem is structural: Ukraine was an important source of heavy equipment in the former Soviet Union. Nearly 20 years later, most of these assets are using the same technology. As a result, the industrial sector is labour and energy intensive, made viable in the past by low cost energy and labour.
In addition to making sure that markets are allowed to work freely, the state should consider how to promote energy efficiency further. Such measures should address market imperfections and market failures that prevent households and companies from using energy in an efficient manner.

Similarly, district heating was designed based on low-cost energy. The district heating systems are inefficient, but have been reliable: boilers with limited metering and temperature controls are common in the supply system while most customers have no metering or temperature controls. With no controls and costing based on the size of consumer apartments, there is no incentive to avoid wasting energy at the consumer end.

On a policy level a lot has yet to be done. The new Energy Strategy should focus more on ways to increase energy efficiency and promote green economy. Instead we see a trend that seems to be in reverse. Moreover, while many laws and incentives are being drafted and agreed upon, **implementation** is the action that Ukraine should really focus on.

APPENDIX 1 – LEGISLATION ON ENERGY EFFICIENCY AT A GLANCE

Law of Ukraine «On energy saving»:

Adopted in 1994 and was the first legislative act on energy efficiency.

Law of Ukraine «On alternative sources of energy»:

Adopted in 2003 to determine the legal, economic, environmental and institutional foundations of the use of alternative energy sources and promote the expansion of their use in fuel and energy industry.

Law of Ukraine «On alternative types of fuels»:

The Law defines the principles of state policy in sphere of production (extraction) and the use of alternative fuels, as well as of incentives to increase the share of their use up to 20% of the total fuel consumption in Ukraine until 2020.

Law of Ukraine «On introducing changes to some Laws regarding stimulation of energy saving measures»:

Adopted in 2007. The law stipulates introducing changes in the Administrative Code of Ukraine and tax legislation.

Law of Ukraine «On introducing changes to the Law of Ukraine "On electricity" regarding stimulation of alternative energy sources use":

Adopted in 2009 to promote the development of alternative energy, prescribes he procedure of establishment of "green" tariff, selling and payment principles for electricity, generated with use of alternative energy sources.

State Target Economic Programme on Energy Efficiency

Adopted in 2010 with the purpose to:

- Create the conditions to bring Ukraine's energy intensity per gross domestic product to the level of developed countries and up to the standards of the European Union:
    - Reduce energy intensity of GDP during the Programme implementation by 20% compared to 2008 (by 3,3% annually),
    - More efficient use of fuel and energy resources, and
    - Enhancing competitiveness of national economy;
- Optimize Ukraine's energy balance structure by reducing the share of imported fossil fuels, and replace them with other types of energy resources, including those obtained from alternative energy sources and secondary energy resources.
- **Action Plan for the Regulatory Support to the Implementation of the Energy Efficient Heat Consumption Policy and Modernization of the Heat Supply Sector**
- Approved On 30 July 2012 by the Cabinet of Ministers of Ukraine (N.588).

Certificate of State Target Economic Programme on Energy Efficiency for 2010 – 2015

Approved by the Resolution of the Cabinet of Ministers of Ukraine # 243, dated March 1, 2010

Expected results of the Programme are:

- Reduction of energy intensity of GDP for 20% compared to 2008;
- Reduction of production costs by 10%, non-production related losses of energy carriers by 25% compared to the level of relevant indices, valid at the moment of Programme adoption;
- Increase of installed capacity of the heat generation % as a result of reconstruction of thermal and CHPs, and reduction of the real costs of fuel resources related to heat and electricity generation per unit;
- Optimization of the energy balance, reduction of natural gas, oil products, coal and peat share, replacing them with other types of energy resources such as alternative sources and secondary energy resources.
- Increase the level of heat supply for population and reduce the use of natural gas for heat energy production required to heat the houses by 60% and public institutions buildings by 35% ;
- Reduction of expenditures from state budget to finance public services related to energy supply of the public institutions by 50% ;
- Reduction of the waste of natural resources (resulting in an overall decrease of 15-20%), also reducing the volume of energy resources consumption;
- Reduction of pollutant emissions by 15-20%;

PART 2: Main British EE Policies and Actions

BACKGROUND

The current **energy policy of the United Kingdom** is set out in the Energy White Paper of May 2007 and Low Carbon Transition Plan of July 2009, building on previous work including the 2003 Energy White Paper and the Energy Review Report in 2006. It is led by the Department of Energy and Climate Change. The current focus of policy is on reforming the Electricity Market, rolling out smart meters and improving the energy efficiency of the UK building stock, through the Green Deal.

The 2007 White Paper: "Meeting the Energy Challenge" sets out the Government's international and domestic energy strategy to address the long term energy challenges faced by the UK, and to deliver four key policy goals:

1. To put the UK on a path to cut carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;
2. To maintain reliable energy supplies;
3. To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve productivity; and
4. To ensure that every home is adequately and affordably heated.

The scope of energy policy includes the production and distribution of electricity, transport fuel usage, and means of heating (significantly Natural Gas). The policy recognises: "Energy is essential in almost every aspect of our lives and for the success of our economy. We face two long-term energy challenges:

- Tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and
- Ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel."

The policy also recognises that the UK will need around 30-35GW of new electricity generation capacity over the next two decades as many of the UK's current coal and nuclear power stations, built in the 1960s and 1970s, reach the end of their lives and are set to close.

The 2006 Energy Review reintroduced the prospect of new nuclear power stations in the UK. However, following a judicial review requested by Greenpeace, on 15 February 2007 elements of the 2006 Energy Review were ruled 'seriously flawed', and 'not merely inadequate but also misleading'. As a result, plans to build a new generation of nuclear power plants were ruled illegal at that time.

In response, the Government ran "The Future of Nuclear Power" consultation from May to October 2007. The Government's response to the consultation conclusions, published in January 2008, state "set against the challenges of climate change and security of supply, the evidence in support of new nuclear power stations is compelling."

The January 2008 Energy Bill updates the legislative framework in the UK to reflect their current policy towards the energy market and the challenges faced on climate change and security of supply. Key elements of the bill address nuclear energy, carbon capture and storage, renewable energy,

and offshore gas and oil. A framework to encourage investment in nuclear power within a new regulatory environment was simultaneously published in the January 2008 Nuclear White Paper.

In October 2008, the Government created the Department of Energy and Climate Change to bring together energy policy (previously with the Department for Business, Enterprise and Regulatory Reform), and climate change mitigation policy (previously with the Department for Environment, Food and Rural Affairs).

Historically a country emphasising its coal, nuclear and off-shore natural gas production, the United Kingdom is currently in transition to become a net energy importer.

In the year 2011 the percentage of primary energy derived from major sources was as follows[11]:

- Natural gas: 41%
- Coal: 29%
- Nuclear: 18%
- Renewables: 9%
- Other: 2%.

Saving Energy

The starting point for reducing carbon emissions is to save energy. The challenge is to secure the heat, light and energy we need in homes and businesses in a way that cuts the amount of oil, gas and electricity used and the carbon dioxide emitted. Actions proposed include:

- Increasing information, e.g. through Home Information Packs
- Raising basic standards, removing inefficient goods from the market
- Making best use of the EU Emissions Trading Scheme and Climate Change Levy
- Making the Government estate carbon neutral by 2012
- Increasing the focus on energy efficient transport

Cleaner Energy

Cost-effective ways of using less energy will help move towards the carbon reduction goal. But on their own they will not provide the solution to the challenges faced: there is also a need to make the energy used cleaner. Under this head, the Government considered:

- more distributed energy generation including low-carbon heat
- more use of community based systems, including CHP
- a strong commitment to carbon pricing in the UK, through improving the operation of the EU Emissions Trading Scheme
- a strengthened commitment to the Renewables Obligation
- proposals for reform of the planning regime for electricity projects
- a clear statement of our position on new nuclear build
- support for carbon capture and storage
- developing alternative fuels for transport

[11] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65895/5991-statistical-press-release-dukes-2012.pdf

The Energy Security Challenge

The challenges of reducing carbon emissions and ensuring security of supply are closely linked. Security of supply requires that we have good access to available fuel supplies, the infrastructure in place to transport them to centres of demand and effective markets so that supply meets demand in the most efficient way. Many of the measures already described for tackling carbon emissions also contribute to the healthy diversity of energy sources that is necessary for meeting the energy security challenge.

There are two main security of supply challenges for the UK:

- Managing increased dependence on oil and gas imports, especially in the light of the global distribution of energy reserves and growing international demand; and
- Ensuring that the market delivers substantial and timely investment in electricity generating capacity and networks so that households and businesses have the electricity they need at affordable prices.

The Government's response is to continue to open up markets and to work internationally to develop strong relationships with suppliers, developing liberalised markets.

The UK is largely supportive of renewable energy and this is primarily driven by concerns about climate change and dependence on fossil fuels.

In July 2013, the UK Energy Research Centre published a national survey of public attitudes towards energy in the UK.

PUBLIC OPINION

- 74% of participants were very or fairly concerned about climate change.
- 82% were worried about the UK becoming too dependent upon energy from other countries.
- 79% wanted to see a reduction in the use of fossil fuels over the next few decades.
- 81% expressed a desire to reduce their energy use.
- 85% supported solar energy.
- 75% supported wind energy.
- 42% had never heard of carbon capture and storage (CCS) and when given further information many expressed concern, viewing it as a "non transition‟ – a continuation of unsustainable practices associated with fossil fuels.
- The public was undecided on the role of nuclear power in the future energy mix. However, over half (54%) said they would oppose the building of a new nuclear power station in their area.
- A majority (53%) were willing to use electric vehicles, rising to 75% if they performed as well as conventional models.

This can be compared with a similar study from the 1st Annual World Environment Review, published in June 2007, which revealed that:

- 81% are concerned about climate change.
- 79% think their Government should do more to tackle global warming.
- 73% think that the UK is too dependent on fossil fuels.
- 77% think that the UK is too reliant on foreign oil.

- 87% think that a minimum 25% of electricity should be generated from renewable energy sources.
- 24% think that the Government should do more to expand nuclear power.
- 56% are concerned about nuclear power.
- 76% are concerned about carbon dioxide emissions from developing countries.
- 61% think it appropriate for developed countries to demand restrictions on carbon dioxide emissions from developing countries.

RECOMMENDED UK ENERGY EFFICIENCY POLICY DOCUMENTS

A list of documents relevant to the most interesting and useful examples in the UK can be found here below.

Links to the relevant Norms, Regulations, Policies and documents will also be provided to ease your research and satisfy your curiosity.

UK - Energy Bill 2013-2014:

http://www.publications.parliament.uk/pa/bills/lbill/2013-2014/0048/140048.pdf

The UK Energy Bill plans to make provision for or in connection with reforming the electricity market for purposes of encouraging low carbon electricity generation or ensuring security of supply; for the establishment and functions of the Office for Nuclear Regulation; about the government pipe-line and storage system and rights exercisable in relation to it; about the designation of a strategy and policy statement; for the making of orders requiring regulated persons to provide redress to consumers of gas or electricity; about offshore transmission of electricity during a commissioning period; for imposing further fees in respect of nuclear decommissioning costs; and for connected purposes.

UK - Energy Bill 2012-2013: http://www.official-documents.gov.uk/document/cm83/8362/8362.pdf

The Energy Bill 2012 -2013 aims to close a number of coal and nuclear power stations over the next two decades, to reduce dependence on fossil fuels and has financial incentives to reduce energy demand. Government climate change targets are to produce 30% of electricity from renewable sources by 2020, to cut greenhouse gas emissions by 50% on 1990 levels by 2025 and by 80% on 1990 levels by 2050.

The Energy Bill 2012-2013 is a Bill of the Parliament of the United Kingdom, introduced by the government for first reading on 29 November 2012. It succeeds the Energy Act 2010. The Bill focuses on setting decarbonisation targets for the UK, and reforming the electricity market.

UK – Energy Bill Revolution: Executive Summary:

http://www.energybillrevolution.org/wp-content/uploads/2012/02/Energy-Bill-Revolution_executive-summary.pdf

UK – Meeting the Energy Challenge: a White Paper on Energy:
http://www.stats1.bis.gov.uk/ewp/ewp_foreword_summary.pdf

The 2007 Energy White Paper: *Meeting the Energy Challenge* was published on 23 May 2007. The 2007 White Paper outlines the Government's international and domestic strategy for responding to two main challenges:

- cutting carbon emissions to tackle global warming
- ensuring secure, clean and affordable energy as imports replace declining production from North Sea oil and gas

It seeks to do this in a way that is consistent with its four energy policy goals:

- cutting the UK's carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;
- maintaining the reliability of energy supplies;
- promoting competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve productivity; and
- ensuring that every home is adequately and affordably heated.

The paper anticipates that it will be necessary to install 30-35 GW of new electricity generation capacity within 20 years to plug the energy gap resulting from increased demand and the expected closure of existing power plants. It also states that, based on existing policies, renewable energy is likely to contribute around 5% of the UK's consumption by 2020, rather than the 20% target mentioned in the 2006 Energy Review.

UK – The Energy Efficiency Strategy:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65602/6927-energy-efficiency-strategy--the-energy-efficiency.pdf

This strategy sets the direction for energy efficiency policy for the coming decades. It makes clear the ambition, the barriers needed to be addressed, and the additional steps necessary to stimulate the energy efficiency market.

UK - Energy security a national challenge in a changing world 2009:

http://www.decc.gov.uk/assets/decc/what%20we%20do/global%20climate%20change%20and%20energy/international%20energy/energy%20security/1_20090804164701_e_@@_energysecuritywicksreviewbisr3592energyseccweb.pdf

Review of the implications of developments in international energy markets for the UK's future energy security. The geopolitics of energy insecurity will be a key theme for the 21st century, securing Britain's energy supply must therefore be a national priority as we transition to a low carbon economy.

UK – Low Carbon Transition Plan 2009:

http://www.decc.gov.uk/assets/decc/white%20papers/uk%20low%20carbon%20transition%20plan%20wp09/1_20090724153238_e_@@_lowcarbontransitionplan.pdf

Published on 15 July 2009, the UK Low Carbon Transition Plan details the actions to be taken to cut carbon emissions by 34% by 2020, based on 1990 levels (of which 21% had been achieved at the time of publication). As a result, by 2020 is it envisaged that:

- Over 1.2 million people will be employed in green jobs.
- The efficiency of 7 million homes will have been upgraded, with over 1.5 million of them generating renewable energy.
- 40% of electricity will be generated from low carbon sources (renewables, nuclear power and clean coal).
- Gas imports will be 50% lower than would otherwise have been the case.
- The average new car will emit 40% less carbon compared to 2009 levels.

ACTIONS AND SCHEMES

In addition, we here below present some of the actions and schemes that the UK is successfully implementing, which could eventually become source of inspiration for action in Ukraine.

1. Green Deal

The Green Deal is a scheme that can help to make energy-saving improvements to homes or business, for example:

- insulation - eg solid wall, cavity wall or loft insulation;
- heating;
- draught-proofing;
- double glazing;
- renewable energy generation – for ex. solar panels or heat pumps.

1.1 Energy-saving schemes

You can combine the Green Deal and other schemes to make improvements more affordable if you or your property qualify:

- Energy Company Obligation - help from your energy company to improve your home if you're on certain benefits or a low income, or for certain hard-to-treat properties
- Feed-in Tariffs - payments from your energy provider if you generate your own electricity (i.e. through solar panels or a wind turbine)
- Renewable Heat Incentive - money to help meet the cost of installing renewable heat technology for your business or not-for-profit
- Renewable Heat Premium Payment - money to help with the cost of installing renewable heating technologies in your home
- A house is only likely to benefit from the Green Deal if it's not energy efficient and one of the following applies:
- it wasn't built or renovated in the last 3 years;
- the walls and loft are not insulated;
- an old boiler and no heating controls;
- you are interested in renewable heating or generating your own energy supply (i.e. solar panels).

2. Renewable Heat Incentive (RHI)

The Renewable Heat Incentive (RHI) is the world's first long-term financial support programme for renewable heat.
UK launched the RHI in November 2011 with a scheme for the non-domestic sector that provides payments to industry, businesses and public sector organisations. UK has now set out plans for providing longer term support for homeowners in 'Renewable Heat Incentive: the first step to transforming the way we heat our homes'.
DECC plan to open the household scheme in spring 2014. The RHPP scheme has been extended for a further year to March 2014 to provide continued support for households until the domestic RHI is introduced.
The RHI pays participants of the scheme that generate and use renewable energy to heat their buildings. By increasing the generation of heat from renewable energy sources (instead of fossil fuels), the RHI helps the UK reduce greenhouse gas emissions and meet targets for reducing the effects of climate change.

2.1 Expanding the non-domestic RHI

In September 2012, DECC published their plans for expanding the existing non-domestic RHI scheme and this included the introduction of additional technologies. They are progressing with work and aim to publish their plans for scheme expansion in the autumn alongside the outcomes of the 2013 Non-Domestic Tariff Review.

2.2 Improvements to the non-domestic RHI

In 2012 DECC consulted on proposals for introducing greater certainty to organisations who are either wanting to join the RHI or existing participants', as well as improving the application process. The Government response was published outlining how DECC plans to implement these proposals by ensuring the scheme:

- remains financially sustainable;
- offers good value for money for the tax payer;
- meets previous commitments to introduce biomass sustainability by setting out sustainability criteria for fuel source and green house gas emissions and air quality emissions limits;
- reduces administrative burdens to Ofgem and applicants.

Following consultation DECC is implementing a number of changes to the non-domestic RHI.

2.3 The 2013 Non-Domestic Tariff Review

In response to industry and market feedback, DECC has looked at the evidence on cost data and heat usage assumptions used to set the levels of tariffs when the non-domestic scheme was launched alongside the level of uptake so far under the scheme and evidence from the renewable heat industry and market.

As a result of this, DECC launched the Non-Domestic Scheme Early Tariff Review consultation in June which set out how the Government proposed to respond to the low up take of some technologies in the scheme so far, to ensure that renewable heat can make an effective contribution to our 2020 renewable energy targets, support the UK renewable heat industry and achieve decarbonisation of heat supply by 2050.

2.4 The domestic RHI scheme

On 12 July 2013 DECC set out the policy framework for introducing longer term support for households 'Renewable Heat Incentive: the first step to transforming the way we heat our homes'.

Alongside this DECC published the government response to the consultation, RHI: proposals to launch a domestic scheme, and the associated impact assessment.

The scheme is for householders looking to replace their current heating system with a supported renewable heat technology and householders who have installed a renewable heat technology since 15 July 2009. The domestic RHI will pay owners the following:

Technology	ASHP	GSHP	Biomass boilers	Solar thermal panels
Tariff	7.3p/kWh	18.8p/kWh	12.2p/kWh	At least 19.2 p/kWh

The announcement follows extensive consultation on how a financial incentive would work best for householders and takes into account lessons learned from the Renewable Heat Premium Payment grant scheme (RHPP) and the non-domestic RHI.

3. CHP

Combined heat and power (CHP) is a highly efficient process that captures and utilises the heat that is a by-product of the electricity generation process. By generating heat and power simultaneously, CHP can reduce carbon emissions by up to 30% compared to the separate means of conventional generation via a boiler and power station.

3.1 EC Directive on promotion of CHP in the internal energy market

This Directive, developed by the European Commission (EC) in 2004, aims to promote high-efficiency cogeneration given the potential benefits with regard to saving primary energy, avoiding network losses and reducing emissions, in particular of greenhouse gases. In addition, efficient use of energy by CHP can also contribute positively to the security of energy supply. The Directive's support s the installation of CHP where there is a significant demand for heat. Its main measures include:

- a single methodology for establishing high efficiency CHP across EU member states;
- a 'guarantee of origin' for electricity from CHP sources;
- obligations on EU member states to analyse national potentials for high-efficiency CHP and report progress on its development;
- evaluation of the different ways EU member states support CHP;
- ensure equitable or preferential access for CHP on the electricity transmission and distribution networks
- encouraging EU member states to evaluate their own legislative and regulatory framework with a view to removing barriers to the uptake of CHP.

3.2 UK involvement in the Directive

The department supports the aims of the Directive, and were actively involved in its development. The priority is to ensure it benefits CHP development in the UK.

4. CRC

The CRC Energy Efficiency Scheme (often referred to as simply 'the CRC') is a mandatory scheme aimed at improving energy efficiency and cutting emissions in large public and private sector organisations. These organisations are responsible for around 10% of the UK's greenhouse gas emissions.

The scheme features a range of drivers, which aim to encourage organisations to develop energy management strategies that promote a better understanding of energy usage. It is designed to target energy supplies not already covered by Climate Change Agreements (CCAs) and the EU Emissions Trading System.
The CRC affects large public and private sector organisations across the UK. Participants include supermarkets, water companies, banks, local authorities and all central government departments.
The Department of Energy & Climate Change (DECC) has developed the CRC policy in partnership with the Scottish Government, the Welsh Assembly Government and the Department of Environment Northern Ireland.

5. Electricity Demand Reduction

In the Electricity Market Reform White Paper 2011, DECC made a commitment to assess whether there are sufficient support and incentives available for households, businesses and organisations to improve the efficiency of their electricity use.
The Electricity Demand Reduction (EDR) project was initiated in July 2011 to fulfil this commitment.
Following internal work and some expert analysis by McKinsey & Co, commissioned in February 2012, DECC believe that there is significant potential for greater efficiency in the use of electricity in the UK.
The research shows that:

- there is significant potential for using electricity more efficiently in the UK across a range of sectors;
- on the current trajectory, and including existing policy, the UK is unlikely to realise all of this potential.
  The final version of the report takes into account public comments on the draft version that was published in July 2012:
- Capturing the full electricity efficiency potential of the UK

To identify what else can be done to improve electricity efficiency, DECC is holding a consultation: Electricity Demand Reduction: Consultation on options to encourage permanent reductions in electricity use.
The consultation document:

- looks at the opportunities in all sectors and identifies a number of barriers that are preventing this potential from being realised;
- seeks views on whether financial incentives can deliver cost effective reductions that are beneficial to society as a whole, including more targeted, sector-specific financial incentives;
- seeks views on the potential for broader approaches by sector, including whether voluntary and information proposals could be effective.

6. Climate Change Agreements (CCA)

Climate Change Agreements (CCAs) allow eligible energy-intensive businesses to receive up to a 65% discount from the Climate Change Levy (CCL) in return for meeting energy efficiency or carbon-saving targets. The discount for electricity will increase to 90% from April 2013.
The DECC administers the current CCA scheme, which will end in March 2013.
The Environment Agency will administer a new CCA scheme from 1 April 2013 to 31 March 2023.

SCHEMES

1. Fuel Poverty

DECC has launched the following initiatives to help increase energy efficiency in households so consumers can save money on their energy bills:

- Green Deal – lets homes and businesses make energy efficiency improvements with some or all of the cost paid for from the savings on their energy bills;
- Smart meters – a programme to install gas and electricity meters that provide near real-time information on energy use in households and small businesses;
- The Energy Company Obligation (ECO) – a subsidy from energy suppliers that will work alongside the Green Deal to provide energy-saving home improvements for those most in need and for properties that are harder to treat;
- Electricity Demand Reduction project – assesses whether there is sufficient support and incentives to households, businesses and organisations to improve the efficiency of their electricity use;
- Smarter Heating Controls Research Programme - to establish whether 'smarter' heating controls reduce domestic energy consumption

The Department for Communities and Local Government (DCLG), supported by DECC, is also working to improve the energy efficiency of buildings.

1.1. Helping households get the best deal

Households can save up to £200 per year by switching their energy suppliers. This is why DECC is pushing energy companies to make switching much easier and quicker.
Energy UK have put together this simple animation on how to switch supplier or tariff.
Also helping consumers to find the best deals on their energy tariffs by:

- offering advice through the Energy Savings Advisory Service (ESAS);
- negotiating an agreement with the major energy suppliers to help consumers find the best tariff;
- creating the 'Cheaper Energy Together' fund to support consumers to combine their buying power to get better deals.

1.2. Helping the most vulnerable households

DECC is making sure the most vulnerable households get direct financial help through:

- Warm Home Discount - participating energy suppliers help low-income and vulnerable households meet energy costs;
- Winter Fuel Payment - annual payment of up to £300 for pensioner households;
- Cold Weather Payment - payment during periods of severely cold weather to pensioners who receive pension credit or people on income-related benefits who meet certain criteria.

1.3. Big Energy Saving Network

DECC has launched a £752,000 fund to support eligible third sector organisations and community groups. The Big Energy Saving Network will deliver an extensive programme of outreach to vulnerable consumers, focussed on helping them reduce their energy costs and energy consumption.
This funded outreach programme will run through autumn/winter 2013/14, concluding on 31 March 2014. The programme of outreach will be led by 160 specially trained Network 'Champions', voluntary workers that will co-ordinate the training of further volunteers and front line workers. These volunteers and frontline workers will in turn deliver proactive advice to consumers on energy issues via an assisted action approach.

1.4. Bills and legislation

The Warm Homes and Energy Conservation Act 2000 (WHECA) places a duty on government to have a strategy for making sure no person lives in fuel poverty, as far as is reasonably practicable, by 2016. The government has proposed amendments to the Warm Homes and Energy Conservation Act that are currently the subject of parliamentary debate as part of the passage of the Energy Bill. This follows the response to the consultation after the final report of the Hills Fuel Poverty Review.

The Home Energy Efficiency Scheme Regulations, first published in 2005 and revised until 2012, upholds the Warm Front scheme.

The Energy Act 2010 allowed for the introduction of the Warm Home Discount scheme, while the Energy Act 2011 includes provision for the Green Deal and ECO.

1.5. Implementing the Energy Efficiency Directive provision on access to data for consumers with smart meters

DECC sought views on the implementation of a provision in the new Energy Efficiency Directive that relates to the roll-out of smart meters. The provision requires that domestic consumers with smart meters are provided easy access to at least 24 months of daily/weekly/monthly/annual consumption data.

2. Smart Meters

Smart meters are the next generation of gas and electricity meters and they can offer a range of intelligent functions.

Smart meters bring a wide range of benefits. For example:

- Smart meters give you near real time information on energy use – expressed in pounds and pence;
- You will be able to better manage your energy use, save money and reduce emissions;
- Smart meters will bring an end to estimated billing - you will only be billed for the energy you actually use, helping you budget better;
- Easier switching - smoother and faster to switch suppliers to get the best deals.

The Government is requiring energy companies to install smart meters for their customers, and is setting out rules to ensure that they do this in a way that is in the interests of consumers, including rules around:

- data access;
- security;
- technical standards for the smart metering equipment;
- meeting the needs of vulnerable consumers.

Smart meters will be rolled out as standard across the country by 2020. But there will not be a legal obligation on individuals to have one.

Energy companies will be required to install smart meters and take all reasonable steps to reach everyone.

Live Programmes/Assessments:

1. **Community Energy Saving Programme (CESP)**

CESP targets households across Great Britain, in areas of low income, to improve energy efficiency standards, and reduce fuel bills. There are 4,500 areas eligible for CESP. CESP is funded by an obligation on energy suppliers and electricity generators. It is expected to deliver up to £350m of efficiency measures.
CESP promotes a "whole house" approach i.e. a package of energy efficiency measures best suited to the individual property. The programme is delivered through the development of community-based partnerships between Local Authorities (LAs), community groups and energy companies, via a house-by-house, street-by-street approach. This partnership working allows CESP to be implemented in a way that is best suited to individual areas and coordinated with other local and national initiatives. Up to 400 schemes are expected, benefiting around 90,000 homes and saving nearly 2.9m tonnes of CO_2 emissions. CESP is expected to deliver annual average fuel bill savings for those households involved of up to £300.

2. **Warm Front**

The Warm Front Scheme makes homes warmer, healthier and more energy-efficient. The Scheme offers a package of heating and insulation measures of up to £3,500 (or £6,000 where oil central heating or other alternative technologies are recommended). It is for people on certain income-related benefits. To be eligible you must own your home or rent it from a private landlord.

3. **RE:FIT**

The Mayor of London is committed to London becoming a world leading low carbon capital city with an ambitious target of cutting carbon emissions by 60% by 2025. Public buildings are a significant contributor to London's carbon emissions, contributing as much as 10% to its total footprint. The wider economic and austerity environment also means that there is a growing need to make existing buildings work harder, rather than replacing them with new ones.
Recognising the potential to improve the energy performance of a typical public sector building and therefore reduce its running costs, the Greater London Authority (GLA) established RE:FIT, a building retrofitting scheme to support public sector organisations to reduce their carbon footprint and subsequent energy bills. The target is for 40% of public sector buildings in London to be retrofitted by 2025. This would retrofit 11 million m2, realising a reduction in carbon emissions of over 2.5 million tonnes per annum.
Available to all public sector organisations in the UK, the RE:FIT Framework streamlines the procurement process for energy services by providing pre-negotiated, EU-regulation-compliant contracts that can be used with a group of pre-qualified Energy Service Companies (ESCos).
The ESCo designs and implements energy conservation measures which enables organisations to cut running costs, energy consumption and carbon emissions. The ESCo guarantees the level of energy savings, thus offering a secure financial saving over the period of the agreement. This innovative model transfers the risk of performance to the ESCo. Importantly, RE:FIT is a public sector initiative for the public sector. Unlike other schemes there are no royalty or other costs associated with accessing the RE:FIT Framework and no sharing of the energy saving benefits realised, no matter how high they are.

3.1 Programme Delivery Unit

Helping RE:FIT to succeed is the Programme Delivery Unit (PDU). The PDU is the public face of the RE:FIT programme, proactively recruiting building owners into the programme and supporting organisations throughout the process through benchmarking, recommending optimum financial and CO2 savings, and helping organisations through the procurement, implementation and verification phases. This type of performance contracting approach is new to many public organisations and the support of the PDU gives them confidence in the model and the process.
The PDU's support is fully funded by the GLA and a grant from the ELENA programme (European Local Energy Assistance), so the service is provided at no cost to London's public sector organisations.

4. A strategic approach to climate mitigation

To limit further climate change in London and globally, the Mayor of London has set a target to reduce London's CO_2 emissions by 60% of 1990 levels by 2025.
In October 2011, the GLA published Delivering London's Energy Future: The Mayor's climate change mitigation and energy strategy. This details the Mayor's strategic approach to meeting his CO_2 target and securing a low carbon energy supply for London.

4.1. Retrofitting London

Delivering London's Energy Future recognised that nearly 80% of CO_2 emissions produced in London are from buildings. As such, retrofitting schemes to reduce CO_2 emissions are a central focus of the strategy. The retrofitting schemes comprise of:

- RE:FIT - retrofitting London's public sector buildings, saving millions of pounds every year.
- RE:NEW - retrofitting London's homes with energy efficiency measures, and helping Londoners save money on their energy bills.
- RE:CONNECT - ten low carbon zones across London aiming to reduce CO_2 emissions by 20% by 2012 across the community.
- Decentralised energy programme - supplying 25% of London's energy from secure, low carbon local sources.

Delivering London's Energy Future also details policies and activities underway to reduce CO_2 emissions from new development and transport through the London Plan and the Mayor's Transport Strategy.

4.2. RE:FIT pilot

To test and demonstrate the concept of RE:FIT, pilot projects were delivered on **42 public sector buildings** across London, including those owned by early adopter organisations such as Transport for London, Metropolitan Police Service and London Fire and Emergency Planning Authority. These projects retrofitted energy saving measures to approximately 146,000 m^2 of building space, delivering over **7,000 tonnes** reduction in carbon emissions and an average **28% reduction** in energy consumption identified. The total spend was £7 million with a simple payback period of 7 years, i.e. **a saving of £1 million per annum**.

4.3. RE:FIT Framework

Following the success of the pilot, an OJEU compliant framework was established in January 2010 for 3 years. Available to all public sector organisations in the UK, the framework streamlines the procurement process for energy services by providing pre-negotiated, EU-regulation-compliant

contracts that can be used with a group of pre-qualified Energy Service Companies (ESCos) for the design and implementation of energy conservation measures.

To continue London's leading position in Energy Performance Contracting (EPC), the Greater London Authority (GLA) has procured a new RE:FIT Framework for a further 4 years, which builds on experience from the pilot projects and current framework. Highlights of the new framework include:

- Enabling a range of funding options for energy/carbon reduction projects (currently all projects need to be separately self-financed).
- Simpler tendering options that reduce tendering process costs for both buyers and suppliers thereby making smaller value projects more viable.
- Clearer pricing and contractual powers to help further improve value for money across the lifetime of a project.
- Providing the opportunity for greater client specific requirements and contractual terms to be incorporated into RE:FIT contracts.

www.REFIT.org.uk