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**MUNICIPAL HEATING
REFORM**

Municipal Heating Reform Project

Public Private Partnership Stocktaking Report

December 2009

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Municipal Heating Reform Project

Public Private Partnership Stocktaking Report

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Prepared by
RTI International
3040 Cornwallis Road
Post Office Box 12194
Research Triangle Park, NC 27709-2194

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Acronyms

BLO	Build, Lease, Own
BOO	Build, Own, Operate
BOOT	Build, Own, Operate, Transfer
BROT	Build, Rehabilitate, Operate, Transfer
CEE countries	Central Eastern European countries
CIS	Commonwealth of Independent States
DH	district heating
EBRD	European Bank of Reconstruction and Development
EIB	European Investment Bank
EU	European Union
IMF	International Monetary Fund
NPP	nuclear power plant
PPI database	World Bank's Private Participation in Infrastructure database
PPP	Public Private Partnership
RLRT	Rehabilitate, Lease/Rent, Transfer
ROT	Rehabilitate, Operate, Transfer
SPV	special purpose vehicle (for investment)

Executive Summary and Foreword

Public private partnership (PPP) is designed to increase efficient provision of public services by building on strengths of both public and private sectors. However, the positive effects of the recent trend toward PPP in international experience are largely supported by primarily anecdotal arguments. In response, this report is intended to provide an overview of the history, current status, and trends in PPP in Ukraine, focusing on PPP in district heating. The analysis of the recent developments in district heating ownership in Ukraine does not explicitly answer the question of whether the PPP arrangement is the most effective given the current situation in the housing and communal sector in Ukraine. However, the report supports the argument that further PPP in district heating is encouraged, albeit with a word of caution recommending that government authorities consider seriously the following issues:

1. PPP regulatory framework;
2. PPP institutional capacity; and
3. Transparency and accountability.

This report is intended primarily for policy and decision makers at national and local levels who consider a change in ownership or operational schemes and involvement of the private sector in district heating assets management. The report intends to provide guidance to the donor community considering implementing PPP in infrastructure projects in Ukraine.

1. Introduction

It is a common understanding that infrastructure development boosts economic growth. However, the reduction of public spending facing most market, transitional, and developing economies in recent decades necessitates a search for funds to finance new and maintain existing infrastructure to support long-term economic growth.

The need to find alternative ways to finance infrastructure projects gave rise to the new scheme of cooperation between the public and private sectors, public private partnership (PPP) arrangements, in which the principles of private sector operation are implemented in the provision of public goods.

There are many definitions of PPP. The National Council for Public Private Partnership of the U.S. defines PPP as “a contractual arrangement between a public sector agency and a for-profit private sector concern, whereby resources and risks are shared for the purpose of delivery of a public service or development of public infrastructure.” According to the definition of the European Commission, PPP can be characterized as a transfer of powers, responsibilities, and risks of investment projects traditionally implemented and funded by the public sector to the private sector. *The most common definition of the PPP* is a system of cooperation in which risks and rewards are shared between partners.

2. Types of PPP Arrangements

PPP is considered to be one of the most effective forms of cooperation between public and private sectors. This cooperation is based on the recognition of the fact that both parties benefit from uniting financial resources, technology, and managerial knowledge to improve public service delivery. PPP combines the strengths of the public and private sectors, including the social responsibility, public accountability, and environmental awareness characteristic of the public sector and the financial resources, technology, managerial efficiency, and entrepreneurial spirit of the private sector. Thus, PPP is not only a means of financing public infrastructure but is also a powerful tool for generating cost saving and improving the quality and efficiency of public services.

The main advantages of PPP for infrastructure development projects are realized through:

- Provision of additional capital;
- Provision of effective management and innovative skills;
- Provision of added value to the consumer and the public at large;
- Better identification of needs and optimal use of resources; and
- Safeguarding from economically unviable projects, as the effects of cost underestimates, and benefit overestimates, can be spread broadly in public infrastructure projects.

PPP may take shape through a wide range of contractual forms depending on ownership, risk sharing, and duration of the partnership. In general, PPP can be categorized into four main types, summarized below.

In **GREENFIELD PROJECTS** a new facility is built and operated during the period indicated in the contract. It then is either transferred to the government or remains with the private company under predetermined conditions. There are three most common contractual forms of a *greenfield* project:

- **Build, Own, Operate, Transfer (BOOT)**: the private entity carries out the capital investment in building the facility. It then owns and operates the facility for a period specified in the contract. Following expiration of that period, all assets are returned to the public sector;
- **Build, Own, Operate (BOO)**; and
- **Build, Lease, Own (BLO)**.

In BOO and BLO a private entity is responsible for the financing and operation of the project. Unlike in BOOT arrangements, that private entity becomes the owner of the facility and is not required to hand it back to the government. However, economic activities of a private entity as an owner may be subject to regulatory constraints on operations, pricing, etc.

These contractual forms are characterized by a long-term period of operation (30 years and more). With the long terms, a private entity has an incentive to build a facility of good quality, to keep it in good condition, and to optimize maintenance costs. This type of project presupposes that all market risk associated with production construction and operation costs is shifted to the private sector.

A **DIVESTITURE (PRIVATIZATION)** presupposes that assets, operations, and investment obligations are transferred to the private operator. According to this type of contract, the asset can be transferred in part or full. The private entity may acquire equity of a state-owned enterprise through an asset sale, public offering, or privatization. Most commonly it requires the provision of government guarantees for future tariff increases to achieve full cost recovery or return on capital invested.

With a **CONCESSION**, a private operator takes over the operation and maintenance of a facility based on a lease for the contract period, during which the investment obligations in new equipment or the replacement of the existing infrastructure are required. Thus, commercial risks are imposed completely on the private sector with ownership remaining with the government. Therefore, the tariff level becomes less crucial, as operators can be compensated by lower lease payments, but revenues should be sufficient to cover long-term costs of services and to attain a reasonable return. The most common contractual forms are: **REHABILITATE, OPERATE, AND TRANSFER (ROT)**; **REHABILITATE, LEASE/RENT, AND TRANSFER (RLRT)**; **BUILD, REHABILITATE, OPERATE, AND TRANSFER (BROT)**. All of these are long-term contracts that include a detailed list of investment and service obligations.

MANAGEMENT AND OUTSOURCING CONTRACTS are the simplest form of PPP and do not include any investment obligations. Ownership and investment decisions remain with a public entity while the private company is responsible for management only. Thus, only the operational risk is transferred to the private company by a lease contract. This type of contract for a service is important in situations when it is difficult to attract private investment given a tradition of pricing below cost and government reluctance to set a cost-covering tariff (such as the case in district heating). Management and outsourcing contracts can improve labor productivity and increase operating performance and standards of services, but also have some drawbacks compared to deeper forms of private participation. As a rule these contracts are short term and might not lead to improvements in efficiency and productivity.

2.1 Prevalence of PPP

According to the World Bank’s Private Participation in Infrastructure (PPI) database on projects for Europe and Central Asia, the prevailing type of PPP to date appears to be greenfield projects (49% of total investment), followed by divestitures (47% of total investment). Jointly, these two represent 86% of all projects signed in 1990-2008 (see *Exhibit 1*).

Exhibit 1: Number of Projects by Type of Private Participation in Europe and Central Asia

Financial Closure Year	Concession	Divestiture	Greenfield	Management and Lease Contract	Total
1990	0	0	1	0	1
1991	0	0	5	0	5
1992	0	5	8	0	13
1993	0	150	7	1	158
1994	0	19	17	0	36
1995	0	6	34	1	41
1996	1	10	50	1	62
1997	2	12	22	0	36
1998	2	16	17	2	37
1999	1	4	14	2	21
2000	5	8	11	2	26
2001	2	11	10	4	27
2002	6	8	3	1	18

Financial Closure Year	Concession	Divestiture	Greenfield	Management and Lease Contract	Total
2003	4	3	8	14	29
2004	4	3	7	4	18
2005	3	10	13	8	34
2006	6	14	8	6	34
2007	3	22	15	5	45
2008	4	21	11	1	37
Grand Total	43	322	261	52	678

The nature of public infrastructure, capital intensity, required technology, and risk sharing between the public and private partners govern the extent of private participation in PPP projects. *Exhibit 2* provides an overview of infrastructure services depending on attractiveness for PPP. Since the private sector is guided by profit maximization, the most appropriate areas for private sector participation are telecommunications, energy, and transport.

Exhibit 2: Number of Projects by Primary Sector for Europe and Central Asia

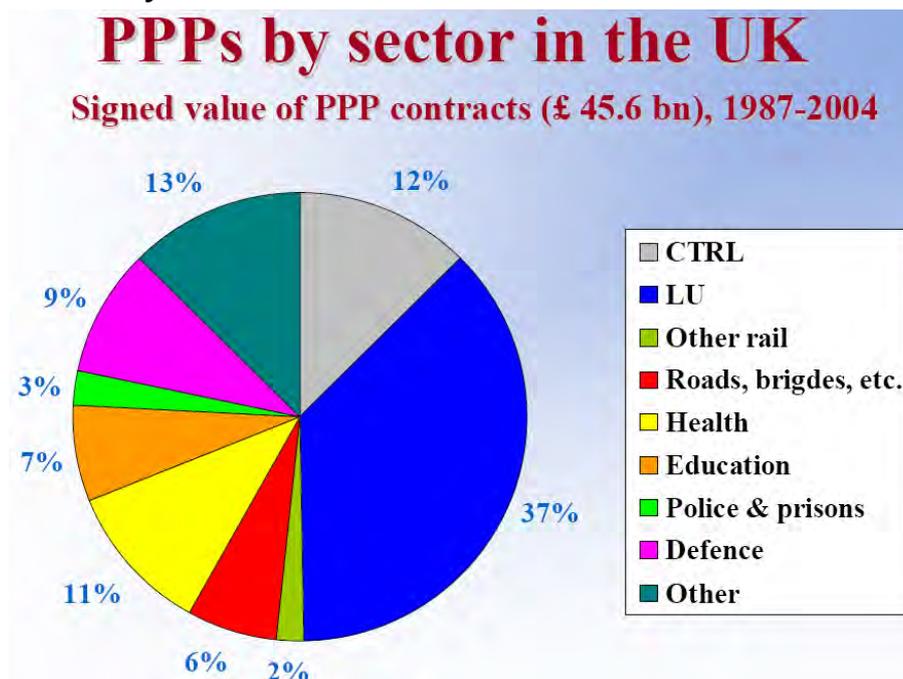
Financial Closure Year	Energy	Telecom	Transport	Water and Sewerage	Total
1990	1	0	0	0	1
1991	0	5	0	0	5
1992	0	10	3	0	13
1993	65	90	2	1	158
1994	11	22	3	0	36
1995	6	32	3	0	41
1996	11	44	4	3	62
1997	10	24	2	0	36
1998	15	15	6	1	37
1999	5	12	3	1	21
2000	10	7	3	6	26
2001	13	8	1	5	27
2002	13	1	0	4	18
2003	12	7	1	9	29

Financial Closure Year	Energy	Telecom	Transport	Water and Sewerage	Total
2004	6	5	3	4	18
2005	14	6	8	6	34
2006	12	8	8	6	34
2007	25	7	10	3	45
2008	26	1	9	1	37
Grand Total	255	304	69	50	678

2.2 PPP in Different Sectors

Developing and transitional economies follow the same investment pattern seen in European Union (EU) developed countries. The distribution of PPP among sectors in the UK, the pioneer of PPP, looks as follows (see *Exhibit 3*).

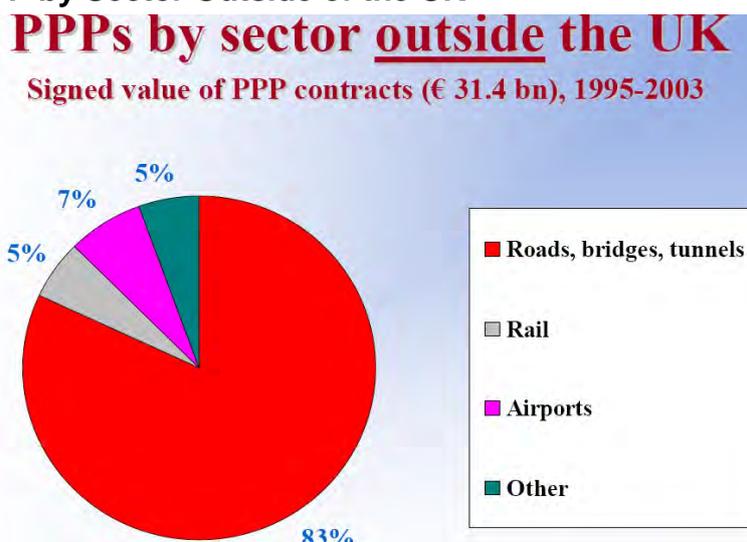
Exhibit 3: PPP by Sector in the UK



Sources: Economic and Financial Studies, EIB; LU is London Underground.

The overall picture of PPP development, demonstrated below, confirms that economic infrastructure such as transport, much more than social infrastructure such as health care or education, is usually a straightforward candidate for PPP.

Exhibit 4: PPP by Sector Outside of the UK



Sources: Economic and Financial Studies, EIB

There are at least three main reasons for PPP proliferation in so-called economic infrastructure projects. First, sound projects that address clear bottlenecks in infrastructure such as roads, railways, ports, and energy are likely to have high economic rates of return and are therefore attractive to the private sector. Second, user charges are often both more feasible and more desirable in economic infrastructure projects. Third, economic infrastructure projects usually have a better-developed market for bundling construction with the provision of related services (for example, construction, operation, and maintenance of a toll road) than social infrastructure projects.

3. Experience with PPP in CEE and Russia

3.1 Central and Eastern European (CEE) Countries Experience

The breakdown of the socialist system in the early 1990s precipitated high debts and bankruptcy of infrastructure systems in CEE countries. The necessity of closing infrastructure spending gaps encouraged these countries to search for innovative ways to finance infrastructural projects and led them to engage in PPPs. It should be mentioned that international finance institutions, such as the European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD), and World Bank highly supported this idea and provided favorable lending conditions for such projects. According to rough estimations, these three international organizations have jointly invested about EUR 35 billion in infrastructure development in eight CEE countries to this day.

The process of accession to the EU has been a key driver of regulatory and market structure reforms facilitating private participation in infrastructure. The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, and Slovenia accounted for 50% of the investment in PPP projects and more than 30% of the PPP projects in the region in 1990–2005. Bulgaria and Romania (which joined the

EU in 2007), along with Croatia and Turkey (which gained EU candidate status in 2004), attracted 25% of the investment and 10% of the projects. The remaining countries in southern and eastern Europe claimed 3% of both. The countries of the Commonwealth of Independent States (CIS) accounted for almost 60% of the projects but only 20% of the investment. Russia attracted most of this activity.

The most recent investment data, including 2008, on upper-middle income countries in Central Europe and Asia is provided in *Exhibit 5*.

Exhibit 5: PPP Projects in Upper-Middle Income Countries in Central Europe and Asia

#	Country	Sector	Subsector	Project Count
1	Belarus	Energy	Natural Gas	1
		Telecommunications		4
		Transport	Railroads	1
2	Bulgaria	Energy	Electricity	11
			Natural Gas	5
		Transport	Airports	1
			Seaports	2
		Water and sewage	Utility	1
3	Croatia	Energy	Electricity	4
		Telecommunications		5
		Transport	Roads	3
		Water and sewage	Treatment plant	1
4	Kazakhstan	Telecommunications		4
		Transport	Airports	2
			Railroads	1
	Latvia	Energy	Natural Gas	1
		Telecommunications		5
		Transport	Seaports	3
5	Lithuania	Energy	Electricity	3
		Energy	Natural Gas	1
		Telecommunications		6
6	Montenegro	Telecommunication		3

#	Country	Sector	Subsector	Project Count
		Water and sewage	Utility	1
7	Poland	Energy	Electricity	25
			Natural gas	1
		Telecommunication		13
		Transport	Airports	3
			Roads	3
			Seaports	3
		Water and sewage	Utility	8
			Treatment plant	1
8	Romania	Energy	Electricity	9
			Natural gas	3
		Telecommunication		8
		Transport	Airports	1
			Seaports	1
		Water and sewage	Utility	4
9	Russian Federation	Energy	Electricity	96
			Natural Gas	2
		Telecommunication		187
		Transport	Airports	7
			Seaports	10
		Water and sewage	Utility	15
10	Serbia	Telecommunication		5
		Water and sewage	Utility	1
11	Turkey	Energy	Electricity	16
			Natural gas	8
		Telecommunication		4
		Transport	Airports	9
			Seaports	7

#	Country	Sector	Subsector	Project Count
		Water and sewage	Treatment plant	1
			Utility	1

Source: World Bank's PPI database

As seen in *Exhibit 5* the largest share of investment went to telecommunications and reflects the high profit expectations from the side of private sector. The total number of PPP projects in telecommunications amounted to 244. The share of PPP projects in other sectors, such as roads, water, and sewage was lagging behind.

The distribution of investments by PPP category in the CEE countries shows the dominance of divestiture arrangements, which accounts for 63.9% of the total amount of financing and nearly half of all projects; 73% of all projects in the energy sector were designed through this type of PPP. In telecommunications, divestiture accounted for more than 42 percent of the PPP projects. The contribution of management contracts is nearly 7% percent of projects. The share of 'concession' type partnership is even less - 4.8% percent of total amount of projects.

However, the potential of PPP was not realized fully, especially with regards to water and sewage projects (see *Exhibit 6*). Some projects in the water sector were even discontinued in Budapest, Sofia, and Tallinn, for example. The overall number of PPP projects in water implemented from 1990 to 2008 is 39; 20 of them are in the Russian Federation.

Exhibit 6: PPP Water Sector Projects in Upper-Middle Income Countries in Europe and Central Asia

Region	Income Group	Country	Project Count
Europe and Central Asia	Upper middle income	Bulgaria	1
Europe and Central Asia	Upper middle income	Croatia	1
Europe and Central Asia	Upper middle income	Montenegro	1
Europe and Central Asia	Upper middle income	Poland	9
Europe and Central Asia	Upper middle income	Romania	4
Europe and Central Asia	Upper middle income	Russian Federation	20
Europe and Central Asia	Upper middle income	Serbia	1
Europe and Central Asia	Upper middle income	Turkey	2

Source: World Bank and PPIAF, PPI Project Database. (<http://ppi.worldbank.org>)

PPP's small share in water and sewage projects is explained by the sector's reliance on public investment for capital expenditure. According to the World Bank, one of the factors contributing to the trend is that water utilities have a history of charging low

tariffs. Those utilities in EU member and candidate states also face the cost of complying with EU drinking water quality and environmental standards, and publicly owned utilities are eligible for grants or concessional loans from the EU.

In general, the first attempts to institutionalize PPP as a key instrument for infrastructure financing in CEE countries were less successful than in other countries and than initially hoped for, mainly due to the lack of effective institutions, shortcomings in macroeconomic policy, and unrealistic demand expectations. Yet, in the context of EU accession, CEE countries substantially improved institutions over the last years, and, hence, created a more fertile ground for PPP in the future. Countries now are entering into the second generation of PPP projects that most likely will be more efficient. In this regard the PPP experience of the Baltic countries and Russia, which have common history with Ukraine, seem especially relevant.

3.2 Latvia

Among interesting PPP projects implemented in Latvia are the following.

- In *Salaspils*, a private partner has agreed to construct 150 apartments, 50 of which are designated for the needs of the municipality. The municipality will provide the private partner with the land necessary for the construction of the houses. The approximate value of the project is €6.6 million.
- In *Cesis*, a private partner will construct and manage a preschool educational establishment. The municipality has agreed to provide the private partner with the land necessary for construction and to pay a monthly fee for the provision of services. The approximate value of the construction is €4.6 million.
- In *Jekabpils*, a private partner is set to modernize and operate the local heating system. The municipality has leased the heating system to the private partner for 30 years and has granted it the right to receive income for the services from end-users. The approximate amount of investment is €4.3 million.

Various Latvian institutions, including the central government, are currently considering the implementation of extensive PPP projects. These include the reconstruction and management of state main roads (valued at approximately €60 million), the construction of the administrative center of the Riga City Council (approximately €61 million), the renovation of the Riga light system (approximately €283 million), and the construction of the Via Baltica northern corridor in Riga (approximately €1.3 billion).

3.3 Lithuania

Three key PPP projects have been implemented in Lithuania.

- The Siemens arena, water, and amusement park in *Vilnius* involved the investment of €38.5 million by a private partner for the construction and operation of the facility. Ten percent of arena operator shares have also been transferred to the municipality. The municipality provided the private partner with a 61-hectare plot of land without charge and invested €4.5 million in road infrastructure.

- The heating system of *Trakai* has been leased to a private partner. The private partner has taken over all of the debts of the municipal company which previously operated the heating system and has been granted the right to receive income for services from end-users. The private partner will also modernize, operate, and maintain the infrastructure and pay the municipality a concession fee amounting to €2.1 million over a 25-year period.
- The concession contract for the *Panevėžys* fitness center stipulates that the private partner will construct in the area assigned by the municipality a fitness center for three major sports, maintain and operate it, and ensure the provision of sports services. The municipality is required to lease to the private partner the land required for the construction.

3.4 Russia

A significant range of issues facing local and regional authorities in Russia, especially the need to improve municipal infrastructure, encourages the authorities to look beyond traditional funding alternatives and to attract private sector assistance in delivery and financing of local infrastructure projects. Russia has developed a supportive legal framework crucial for PPP development. The special legislation necessary for implementation of infrastructure projects includes but is not limited to the following:

- The federal law *On Concession Agreements* (July 21, 2005);
- The *Civil Code of the Russian Federation*, which regulates lease and investment agreements; and
- The federal law on *Placement of Orders for Procurement of Goods, Performing Works, Rendering Services for State and Municipal Needs* (July 21, 2005) that governs management and procurement contracts.

Selected PPP infrastructure projects by sectors are indicated below.

Private operations of municipal utilities:

- Water: Renova-Russia Utility System, Alfa-Rosvodokanal, Eurasian Water Partnership, Interros-Novogor
- District Heating: Renova-Russia Utility System, Interros-Novogor, Basel-Russian Utility Investments, UES subsidiaries
- Electricity Distribution: local private operations, Renova-Russia Utility System, Interros-Novogor, UES subsidiaries
- Airport: Basel Infrastructure – Krasnodar, Gelendzhick, Krasnoyarsk, East Line – Domodedovo, Vnukovo TZK – Vnukovo, Alfa Eco, National Reserve Bank

The World Bank PPP statistics prove that Russia has increasingly been using PPP arrangements for the provision of public goods. This process is driven by the transformation of public entities into commercial enterprises (i.e., major municipal utilities such as water, district heating, public transport, and gas are to be corporatized in Moscow); electricity reform, which increases the role of municipal councils and

their willingness to enter in district heating concessions and co-generation BOT projects; and devolution of responsibilities for hospitals, schools, and colleges to local authorities.

However, obstacles for PPP implementation in Russia remain. They are:

- Lack of expertise among public authorities for preparation of PPP projects;
- Unstable regulatory framework;
- Lack of political will for PPP implementation;
- Risk sharing issues; and
- Lack of financial incentives for the private sector.

4. PPP in Ukraine

Ukraine recently has made significant progress in the legislative area that governs PPP. In 2009 the Verkhovna Rada adopted the law, “On the general principles of the PPP development in Ukraine,” and the cabinet of ministers approved the Concept on PPP Development in Housing and Communal Sector. Apart from these pieces of legislature, Ukraine has a range of laws and legal acts that regulate certain types of PPP. They include the Civil Code, the Commercial Code, the Law on Concession, the laws on concession for construction of highways, on foreign investment, on investment activity, on privatization of the state property, on the lease of state and communal property, and others.

According to the World Bank PPP database, Ukraine has seen PPP development for the last eight years. Since 2000 the number of implemented PPP projects has reached 21 with the total value of 8, a \$185 million investment. Nearly 97% of the PPP investment went to telecommunications, while the majority of projects, 12 out of 21, were implemented in the energy sector. The summarized information on PPP projects in Ukraine is presented in *Exhibits 7 and 8*.

Exhibit 7: Total Projects by Primary Sector and Subsector (US\$ million)

Sector	Subsector	Number of Projects	Total Investment
Energy	Electricity	12	160
	Total energy	12	160
Telecom	Telecom	8	7,925
	Total telecom	8	7,925
Water and sewerage	Utility	1	100
	Total water and sewage	1	100
Total		21	8,185

Exhibit 8: Total Number of Projects by Type and Primary Sector

Sector	Concession	Divestiture	Greenfield Project	Management and Lease Contract	Total
Energy	0	12	0	0	12
Telecom	0	1	7	0	8
Transport	0	0	0	0	0
Water and sewage	0	0	0	1	1
Total	0	13	7	1	21

The comparative analysis of World Bank investment data for the Europe and Central Asia region suggests that Ukraine is ranked fifth in terms of attracting private sector investment in infrastructure projects, leaving Lithuania, Latvia, Georgia, Armenia and Kazakhstan far behind (see *Exhibit 9*).

Exhibit 9: Selected PPP Investment

#	Country	Total Investment in US\$ Million
1	Russian Federation	\$82,228
2	Turkey	\$46,082
3	Poland	\$36,094
4	Romania	\$16,522
5	Ukraine	\$8,185
Total investment for the Europe and Central Asia region		\$242,607

Source: World Bank's PPI database

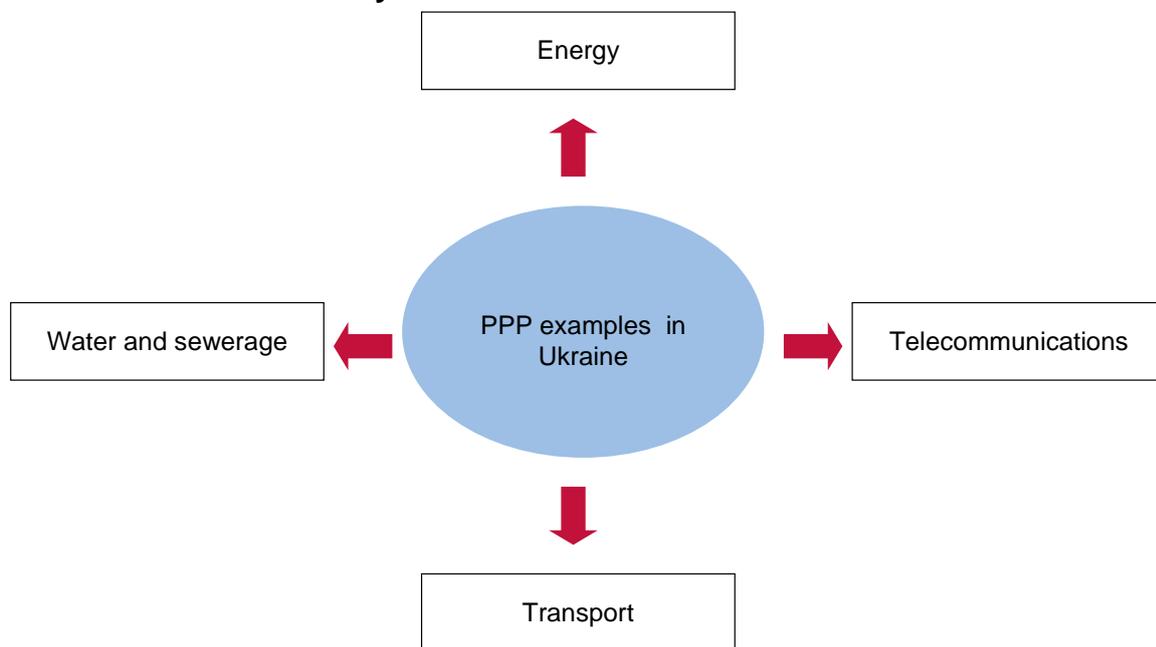
The Ukrainian official data sources (Ministry of Economy, Ministry of Housing and Communal Services of Ukraine, State Property Fund) name additional projects that have features of the PPP instrument in the sectors of transport, communal heat energy, water and sewage:

- Construction and maintenance of the 83.4 square-meter toll highway Lviv-Krakovets within the international transport corridor # 3 Berlin-Dresden-Wroclaw- Krakow- Lviv-Kyiv (concession held by Ministry of Transport of Ukraine; concessionaire, consortium “Concession Transport Lines;” concession term, 45 years, 1999-2044; the financing of the toll highway construction is divided 60 to 40, 60% by the concessionaire and 40% by the Government of Ukraine).
- Heat and water supply:

- 32 private companies from 13 oblasts of Ukraine operate communal heat energy facilities on lease agreement;
- 2 private companies operate water and waste water facilities in Odesa and Kirovohrad (lessees: Infos Ltd. and Water Business Ltd. respectively);
- 2 companies of municipal heat energy and water supply operate on concession agreement; and
- Social infrastructure concession project in Gvardeyiskyi, Simferopol district: housing stock, water and wastewater utilities, heat supply, and automobile transport were given to management and operation by private companies on concession terms.

Thus, the overall PPP activity in Ukraine looks as follows in *Exhibit 10*:

Exhibit 10: PPP Activity in Ukraine



4.1 Factors Favoring PPP Arrangements in Ukraine

PPP is likely to grow in Ukraine based on the two key factors: current state of public financing and market size.

4.1.1 Public Finance and State Budget

Ukraine falls into the category of countries with a heavy state debt burden and severe budget constraints. Given that, Ukraine has to cut public expenditures, and thus it is motivated to open state activities to the private sector.

4.1.2 Market Size

Ukraine has a large market with a large demand and buying power. Market size is an influential determinant of private sector participation in PPP as demand and purchasing power are essential for profit maximization. The general practice suggests that the bigger the market, the more likely private entities engage in PPP.

The other important PPP drivers, such as macroeconomic conditions and efficient legal institutions, are not valid for Ukraine, especially during the global economic crisis.

4.1.3 Macroeconomic Conditions

Governments with a credible, predictable macroeconomic policy based on low inflation and stable exchange rates are more successful in PPP implementation. While governments try to increase limited resources through private participation in PPPs, private companies are governed by profit maximization. Since PPP projects usually require substantial investments and frequently require a certain time for revenue to be generated, stable macroeconomic conditions are of crucial importance as an indication of project profitability. The global financial crisis, which started to exacerbate in mid-2008, affected all developed and developing countries, yet Ukraine suffered more than other countries.

- In 2008, the Ukrainian hryvnia devalued by about 60% to the U.S. dollar;
- The PFTS stock index fell by more than 74% in 2008, one of the most significant declines in the world; and
- In the last quarter of 2008 industrial production in Ukraine fell by 25 % year over year, and in January 2009 by 34%.

Source (Sigma Bleyzer: Overcoming of the Financial Crisis, March 2009)

4.1.4 Institutional Quality and Rule of Law

Besides macroeconomic stability, the supremacy of law is critical for PPP development. Since PPPs are contractual arrangements, they tend to prevail in politically stable countries with strong and effective legal institutions, which protect investors' rights.

Weak courts and corrupted government present a serious risk to PPP. Ineffective bureaucratic institutions decrease the quality of the regulatory environment, which is of great importance to investors.

Ukraine's overall standing on the ease of doing business has not improved this year, although several reforms were implemented, according to **Doing Business 2009**—the sixth publication in an annual series of reports published by the World Bank and International Finance Corporation. Ukraine is ranked 145th out of 181 countries reviewed in the report, after finishing 144th out of 178 countries last year. By comparison, three other CIS countries, Azerbaijan, Belarus, and Kyrgyz Republic were among the top ten reformers globally in the ease of doing business. (The rankings present indicators of the time and cost of meeting government requirements to business start-up, operation, trade, taxation, and closure.)

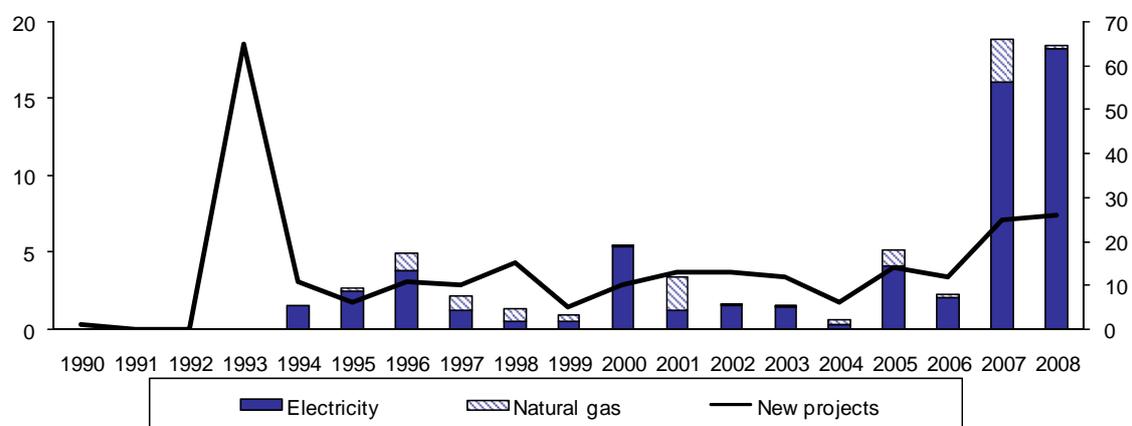
PPPs are influenced also by the government's reputation and the experience of the private sector in PPP projects. Positive past experience of PPP implementation is an important success factor for future projects. Thus, a government's reputation in respecting previous PPPs is necessary for attraction of future PPPs.

5. Public Private Partnerships and District Heating in Europe

The energy sector has undergone dramatic developments since 1990s. The transition from the command-and-control to market economies in CIS and CEE countries, and introduction of competition into traditional monopolistic gas and electricity markets in western Europe, had significant impact on ownership structure in the energy industry.

Figure 3 demonstrates the increasing involvement of the private sector in the energy industry in CEE countries. As seen in *Exhibit 11*, the change of ownership affected mostly the electricity sector.

Exhibit 11: Investment in Energy Projects with Private Participation in Europe and Central Asia, by Subsector, 1990–2008



Source: WB PPI database

The commercialization of the energy market encouraged the development of the new trend: The private sector has started to expand into district heating despite the traditional prevalence of public ownership in this industry. Former public utilities have been experiencing partial or full privatization. Yet, district heating projects seem to form a negligible part in the whole range of various PPP projects. *Exhibits 12* and *13* support this statement.

Exhibit 12: Investment in Electricity Projects with Private Participation in Developing Countries, by Segment and Implementation Status, 2005–2008

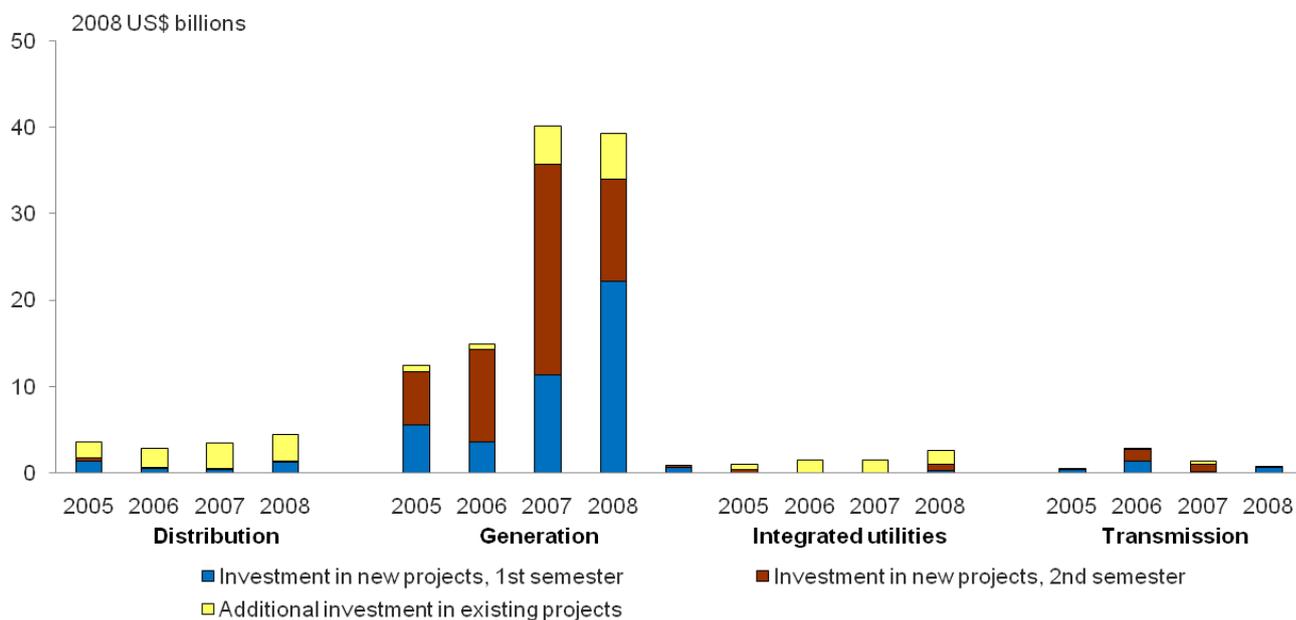
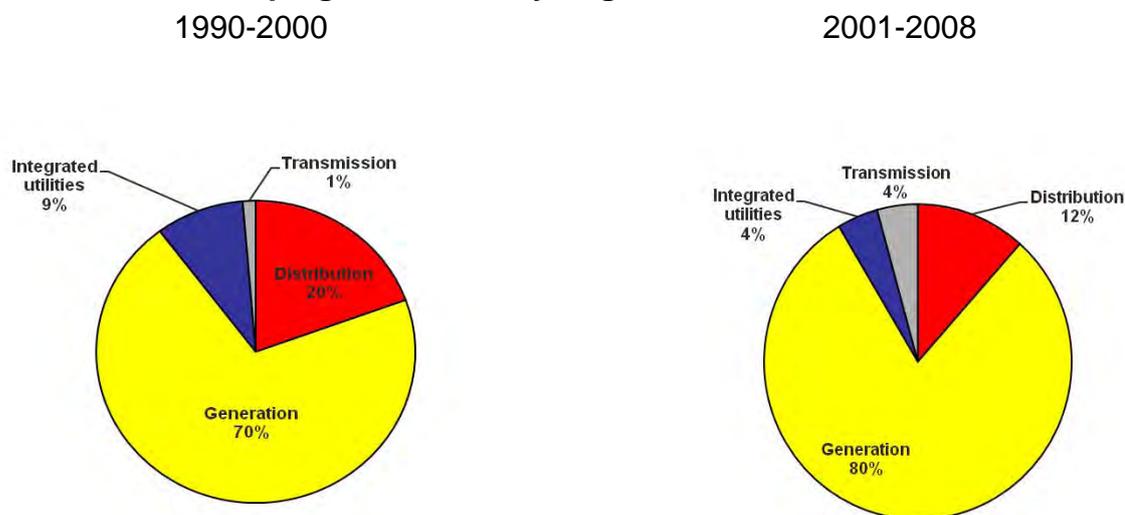


Exhibit 13: Total Investment in Electricity Projects with Private Participation in Developing Countries, by Segment, 1990–2008



As a result of changes in the energy industry at least three types of district heating ownerships emerged:

- Full public control by the state or municipality;
- Full private control; and
- PPP.

The first two types contain 100% ownership, public and private respectively; the latter provides different models, such as leasing, concession, and management contract.

Selected examples of PPP in district heating in western and CEE countries are summarized in *Exhibit 14*.

Exhibit 14: District Heating PPP in Western and Central Eastern Europe

#	PPP type	Examples
1	Leasing	<p>A good example is one of the European leaders in energy services, Dalkia Group, with DH utilities in:</p> <ul style="list-style-type: none"> Estonia: Facilities in Tallin were leased for the private company Tallin Küte, which is 100% owned by Dalkia International. Lithuania: Litesko & Vilniaus Energija (daughter companies of Dalkia) have leased DH facilities in 11 Lithuanian cities.
2	Concession	<p>France: Paris DH system is operated by CPCU under a concession, which was obtained for the first time in 1927. The remuneration to the city of Paris amounts to 1.85% from annual CPCU turnover. Still, the municipality of Paris achieved 1/3 ownership of the company.</p>
3	Privatization of Heat Generation Only	<ul style="list-style-type: none"> Poland: Warsaw, where the Swedish company Vattenfall owns the CHP Company, while distribution is the responsibility of the municipality. Sweden: Alingsås municipality only distributes heat, which is produced by the private company (Sydkraft) from a large biomass boiler. Latvia: the situation is absolutely different. The municipality owns the CHP plant, while the private entity (Rigas Siltums) takes care of heat distribution.
4	Selected Private Minority Equity Partnership	<ul style="list-style-type: none"> Germany: Düsseldorf, where a private company (SWB – Stadtwerke Bremen) bought a 49.9% share in the DH company owned by the municipality. Austria: the municipal company EVN AG, serving Lower Austria province, has sold 48.5% to private investors, out of which 19% is free float.
5	Minority Private Equity Invited through the Stock Market	<ul style="list-style-type: none"> Germany: the first company that went private (in 1999) was MVV Energie AG, belonging to Mannheim municipality. The company sold 25% of its shares to private investors. Italy: ASM Brescia, the Italian multiutility company, trades 30% of its shares on the stock exchange. Bulgaria: according to Bulgarian legislation, not more than 50% of the shares of the DH company can be sold to a private entity.
6	Majority Private, Some Equity Ownership	<ul style="list-style-type: none"> Czech Republic: in the three largest cities (Prague, Brno, and Ostrava) major ownership stakes in the DH companies belong to private

#	PPP type	Examples
		<p>entities.</p> <ul style="list-style-type: none"> Germany: Bremen DH facilities are controlled by Essent (a Dutch public utility) while the municipality keeps only a 13.6% interest in the utility. Macedonia: in Skopje 70% of the company is owned by the employees, 20% belongs to the state, and only 10% to Skopje municipality.
7	Full Private Ownership with Municipal Support	UK: Southampton District, where the French company Utilicom owns and operates a geothermal heating company. The municipality works in collaboration with Utilicom to promote environmental and economical benefits of the DH they provide.

Source: DHSOG, 2006

The examples from central, eastern and western European countries demonstrating a variety of PPP organizational models do not provide a clear-cut answer to the question of whether privately controlled district heating companies are more effective than those that are publicly controlled—or whether they provide better services.

According to the District Heating Ownership Guide: “Europe has no long-term (20-30 years) experience of privatization of DH systems to compare with the traditional public ownership model. No single recommendation can be presented on what ownership structure and organizational arrangement is the best. The individual factors can either be positive or negative, depending on the case-specific situation.”

6. District Heating in Ukraine

Ukraine is one of the most intensive energy consuming countries in the world—the world’s tenth-largest consumer of the natural gas—consuming 2.2% of world’s energy with less than 1% of the world’s population.

Nuclear power plants (NPPs), coal, oil, and gas reserves form key energy sources for Ukraine. Other sources of energy (e.g., water, wind, bio-gas, solar, etc.) are still underdeveloped, and their commercial importance is overlooked.

The country’s economic growth in the last decade has been accomplished through the massive consumption of natural gas imported from Russia. The country’s main energy consumers are the housing and communal sector (44%), industry (35%), and other sectors of economy (21%; source: The energy strategy of Ukraine through 2030). The collapse of its main exports—steel, iron, chemicals, and agricultural products—caused by the global economic crisis has reduced its energy dependence, but demand is likely to pick up again in 2010. Yet Ukraine is only about one-third as efficient as the EU average in its energy use.

Ukraine is known for its technologically out-of-date and physically worn-out communal infrastructure, functioning with a low degree of efficiency. This factor contributes to the general deterioration of public services. The most difficult situation

is observed in sectors such as communal services, which directly impact the quality of life in municipalities.

Municipal heating represents one of the key infrastructure services in Ukraine, with district heating systems meeting the demands of about 65% of the heat consumers in the country. The problems in the heating sector are exacerbated by a number of major issues, detailed in the discussion that follows.

6.1 Lack of Budget Funds

Finance is at the heart of managing the municipal heat supply. No management model will be able to perform without adequate financing. Most municipal heat service providers have incomes that are below the cost recovery level. Naturally, consumables such as fuel and wages have first priority on the available funds, with the result that infrastructure upgrades and even the essential routine repair and replacement of infrastructure are underfunded. Local authorities, who approve heating tariffs below the cost recovery level, are obliged to compensate municipal heat providers for the difference from the municipal budget. Yet scarce municipal budget resources inhibit the flow of the investment funding to the heat infrastructure.

Analysis of the financing of the housing and communal sector from the state budget of 2009 confirms this. The consolidated budget of Ukraine for 2009 allocates expenditures for the housing and communal sector in the amount of 7276.1 million UAH, which is 18.9% less than factual expenditures of 2008 (8968.5 million). The budget execution for the eight months of 2009 is provided below (see *Exhibit 15*).

Exhibit 15: Ukraine Planned v. Actual Expenditures, 2009

million
UAH

#	Subsector	Planned Expenditures 2009	Adjusted Expenditures 2008	Expenditure Growth Rate, % (2009 to 2008)	Actual Expenditures 2009	Actual 2009 Expenditures/Planned 2009 Expenditures
1	Housing	2836.9	2034.6	139.4%	1813.0	63.9%
2	Utilities	2830.3	3486.6	81.17%	1729.7	61.1%
3	Research and development	6.4	7	91.4%	2.7	42.9%
4	Other activities	1602.6	3440.4	46.5%	1602.6	35.2%

In addition to the above expenditures, the state budget for 2009 included the expenditures listed below. As of September 29, 2009, the expenditures for these purposes were not funded due to lack of applications for energy saving projects.

- Subsidy from the state budget to local budgets to repay the difference in tariffs for heat energy, water supply, and wastewater produced, transported, and

supplied to the population. The difference in tariffs was caused by the discrepancy between the actual cost of heat, water, and wastewater and the approved tariffs. The amount of the subsidy is UAH 2 billion. As of September 28, 2009, UAH 960.2 million was financed, which is 48% of the budget appropriations.

- Stabilization Fund expenditures allocated for socio-economic development investment projects. Government Resolution №544-p of May 13, 2009, allocates UAH 723.4 million: 87.4 million for heat and water supply; 33.9 million for reconstruction and construction of boilers for educational and medical institutions. As of September 28, 2009, UAH 312 million was financed, which amounted to 43.1% of the budget appropriations.
- Expenditures for reimbursement of interest rates for credits to implement energy saving projects in the housing and communal sector in the amount of UAH 25 million.
- Stabilization Fund money for the implementation of investment and innovation projects in energy conservation in the housing and communal sector in the amount of UAH 500 million. Expenditures from the Stabilization Fund on energy saving projects are not funded (except for reconstruction of the main heating plant, North, in Lviv) due to the absence of a list of objects that are funded in 2009 by the Stabilization Fund.
- Expenditures for reform and development of the communal sector in rural areas in the amount of UAH 409 million. As of September 28, 2009, 67% of the annual planned expenditures were funded.

In order to settle the problem of heat energy supply companies' accumulated debts for natural gas, the Government of Ukraine has approved Resolution №392 of April 22, 2009, to oblige the Oschadbank and other banks to provide loans to heating companies to help them repay debt formed as of April 1, 2009, for consumed natural gas and owed to Naftogaz of Ukraine. Thus, the debt payment problem was delayed to future budget periods. The same resolution obliges the Ministry of Finance to allocate expenditures to pay the value of the heating debt and the 50% of the debt service in the state budget for 2010-2012. To do so, the 2010 draft state budget indicates that the money raised from the sale of communal property will be the source of the debt payment, and not transfers from the state budget.

6.2 Inadequate Tariffs

District heating tariffs in most Ukrainian municipalities do not provide sufficient cost recovery to provide for sustainable operations of the networks. Depreciation, which is based on outdated asset values, is insufficient to provide adequate cash flow for asset replacement. Allowed profit margins are minimal, many operating costs are calculated on the basis of "normatives," and tariff adjustments are infrequent and in many cases do not fully cover the full escalation of operating costs. Cross-subsidization worsens the situation. The tariff loses its regulating and energy-conservation-stimulating function. The overrated tariffs for industrial enterprises inhibit the payment of adequate salaries, increase the cost of production, and force enterprises to switch to

individual heating. The transfer from central to individual heating means capacity is not fully used and as a result, some heat generation companies work by half of their capacity. It is natural that the operation of the central heating system becomes less efficient, leading to an increase in cost per unit production and state subsidies. The tariff policy eventually undermines the central heating systems in Ukrainian cities.

6.3 High Cost of Heat Production and Supply

Ukraine's heating production and supply infrastructure was designed without regard for energy efficiency and with a perception that municipal heating was a public service that should be supplied on non-commercial terms. Moreover, it has been poorly maintained, which adds to the high rate of heat loss. Over 28% of Ukraine's heating systems have been operating for over 25 years, 43% for over 10 years, and only 29% of heating systems have a lifetime of less than 10 years. Heat loss in heat supply networks ranges from 5 to 32% with the average percentage of heat loss running about 14.3% (source: The energy strategy of Ukraine until 2030). The high price of gas, which is input to the district heating systems, adds to the financial burden and increases the cost of the heat production. The rise in cost for gas for 2009 has not been accounted in the 2009 local budgets. This fact significantly contributed to the operating losses of many communal district heating companies. Moreover, local budgets did not have sufficient resources to pay energy bills of public institutions. According to operating data, local budgets need more than UAH 800 million to pay for energy resources. The losses of public service providers with communal ownership, for seven months of 2009, amounted to more than UAH 1.5 billion, which was 40.6% more than last year. The losses of the district heating operators grew by 1.7 times, and are UAH 863.8 million.

6.4 Inflexible Technical Design (constant flow/variable temperature)

Ukraine's district heating system is supply driven. Consumers have virtually no control over their heat consumption or comfort level. At the same time, the system is unable to respond to varying ambient temperatures at consumer/building level, and it is therefore impossible to effectively match demand with supply on a building level.

The situation is aggravated by the state of buildings and utilities. The survey conducted by the Institute of Sociology of the National Academy of Science of Ukraine in the fall of 2008 points to the following facts: 60 % of buildings of the housing stock in Ukraine were constructed before 1978; 30% before 1991, and 10 % after 1991. It is generally accepted that capital renovation of buildings accompanied by the replacement of all utilities needs to take place every 30 years. As of 2008, 62% of buildings required capital renovation. The poor state of building utilities and lack of technical capacity of consumers to control consumption of heat contribute to the general hardships facing district heating sector.

6.5 Arrears

Non-payment for communal services is still common, often due to the lack of payment discipline and lack of effective remedies to enforce payment or political will

to use these remedies. However, according to the operating data of the State Statistics Committee the payment for communal services by the population is very high for the 10 months of 2009:

- 97.8% of the accrued amount has been paid by the population. The highest level of payment for communal services is found in Kherson, Kirivohrad, Kyiv, and Zakarpattia oblasts (105.5-104.1%); the lowest, in the cities the of Kyiv, Sevastopol, and Odesa regions.
- Arrears of payment for communal services by the population increased in October 2009 by 3.9% compared to September 2009 and amounted to UAH 8954.7 million. The average term of the arrears is 4.2 months.

6.6 The Case for PPP in Ukraine

Due to the inefficiency of Ukraine's heating industry infrastructure, about one-third of energy loss takes place regularly. This energy loss added to rising costs for natural gas has resulted in a heavy toll on consumers' budgets, witnessed by mounting arrears. Thus, there is a serious need to explore opportunities for efficient energy supply and efficient energy use.

Ukraine has a huge need for investment in local heat infrastructure. Scientists from the Institute of the Technical Thermal Physics have estimated that the total investment required for the comprehensive heat sector modernization for a five-year period is UAH 104 billion. The Government of Ukraine cannot provide such funds. Therefore it is appropriate to involve local governments and the private sector in implementation of the state heat sector modernization program.

7. Analysis of Private Investment in Municipal Heat Supply

Among the many measures of success in Ukraine's local municipal economic development, one important indicator is the ability to choose from a broad array of financing options for infrastructure projects and public services.

According to the Ministry of Housing and Communal Services of Ukraine, 27 business entities provide heat supply services in 24 oblasts of Ukraine, the Autonomous Republic of Crimea, and the city of Kyiv; 22 of them are of communal ownership, 2 are joint stock companies, Kyivenergo and Chernigovtelpocomunenergo; and 3 are leasing companies, Zhytomyrtelpocomunenergo, Krymtelpocomunenergo, and Sumyrtelpocomunenergo.

Based on state statistics committee data, 917 business entities, including 210 private companies, have been assigned the 40.3 code of economic activity, which implies the supply of steam and hot water for central heating and production of heat energy.

As of December 31, 2008, 2888 business entities from 196 cities of Ukraine representing 24 oblasts, the Autonomous Republic of Crimea, and the cities of Kyiv and Sevastopol reported on produced and sold heat energy. According to the official

statistics, 116 225.87 thousands Gkal were produced and sold in 2008 compared to 123 195.31 thousands Gkal in 2007, which is 6969.44 thousands Gkal less.

Business entities with private sector ownership operating in the sector of the heat energy production and supply are listed in *Exhibit 16*.

Exhibit 16: Heat Production and Supply Business Entities with Private Sector Ownership

#	City	Oblast	Business Entity
1	Artemivsk	Donetsk	Artemivsk Energija LTD
2	Kramatorsk	Donetsk	Kramatorskteploenergo LTD
3	Shostka	Sumy	Shostka Enterprise Kharkivenergoremont Shostka Teplo LTD
4	Okhtyrka	Sumy	Okhtyrka affiliate Praveks Brok LTD
5	Kirovohrad	Kirovohrad	High Energy Technologies LTD, subsidiary of Teploenergotsentral Center of Scientific and Technical Innovations of the Ukrainian Naftogas LTD, subsidiary of Teploenergotsentral
6	Berdiansk	Zaporizhzhia	Berdiansk teplomerezhi CJSC
7	Vinnytsa	Vinnytsa	Teplocomunenergo Mayak, subsidiary of the Mayak OJSC
8	Lysychansk	Luhansk	Lysychanska Oil Investment Company CJSC
9	Kyiv	Kyiv	Darteplotsentral CJSC
10	Kharkiv	Kharkiv	Heat Electric Generation Plant 3 CJSC Hospital complex Boilers LTD Heat Electric Generation Plant 5 OJSC
11	Chernigiv	Chernigiv	Tekhnova LTD, Chernihiv Heat Electric Generation Plant" Oblteplokcomunenergo OJSC
12	Lutsk	Lutsk	Energy Company Lutskteploenergo LTD
13	Kamianets- Podilskyi	Khmelnyskyi	Teplovodenergia CJSC
14	Rivne	Rivne	Communal Energoservisna Company CJSC
15	Gorlivka	Donetsk	Gorlivskateplomerezha"CJSC
16	Nikopol	Dnipropetrovsk	TeplogeneratsiaCJSC
17	Simferopol	Autonomous Republic of Crimea	Subdivision of the Crimea Heat Electric Generation Plant LTD
18	Sevastopol	Autonomous Republic of Crimea	SGS Plus LTD

#	City	Oblast	Business Entity
19	Kerch	Autonomous Republic of Crimea	Crimea Heat Electric Generation Plant LTD Kamysh Burunska Heat Electric Generation Plant
20	Feodosiya	Autonomous Republic of Crimea	Teodosiya CJSC
21	Alushta	Autonomous Republic of Crimea	Doctor Shteiholts' Dacha LTD
22	Kherson	Kherson	Kherson Heat Electric Generation Plant OJSC
23	Nizhyn	Chernihiv	Nishynteplomerzhi LTD
24	Sumy	Sumy	Sumyteploenergo LTD
25	Zhovti Vody	Dnipropetrovsk	Prostor S LTD
26	Vyshgorod	Kyiv	Vyshgorodteploenergo LTD

Leasing companies operate in cities detailed in *Exhibit 17*.

Exhibit 17: Heat Supply Leasing Companies in Ukrainian Cities

#	City	Oblast	Business Entity
1	Simferopol	Autonomous Republic of Crimea	Leasing company Crymteplokomunenergo registered with affiliates in cities of the ARC
2	Zhytomyr	Zhytomyr	Zhytomyr leasing company Zhytomyrteplokomunenergo
3	Melitopol	Zaporizhzhia	Melitopol leasing company Teplomerezhi
4	Khmelnutsyi	Khmelnyskyi	Khmelnyskyi leasing company Western Boiler House

According to the official statistics (see *Attachment 1*) around 20% of business entities operating in the municipal heat supply sector have private involvement. As a rule they are concentrated in the central and eastern regions of Ukraine. Most of these companies are small and according to unofficial sources are affiliated with local officials. Among large businesses the Industrial Union of Donbass is worth mentioning. Ukrainian tycoons, such as Rinat Akhmetov and Konstantyn Grigoryshyn, have stakes in the municipal heat supply industry as well. Large foreign investors limit their engagement to the American company Contour Global that is leasing Kramatorsk Heat Electric Generation Plant and Vyshgorod Heat Distribution System. The other foreign company that is the pioneer in concessions of the municipal heat supply sector in Ukraine is a Lithuanian company called Energia.

7.1 Concession

In 2007 *Artemivsk* city authorities were forced to seek an investor for municipal heat supply as the communal heat energy distribution company *Artemovsk Teploset* was in tax pledge to Naftogaz because of debt and the city budget had no funds for their

redemption. Based on the results of the international competition in which two Lithuanian companies took part Ukmerges Energija was selected for the 40-year concession of the municipal district heating networks. Ukmerges Energija along with Energijos Taupymo, Centras Akmenes Energija, Prienu Energija, and Latgales Energija form the Baltic energy group Energija, which specialize in the design and construction of boiler houses in Estonia, Latvia, Lithuania, Brazil, and India.

The communal heat distribution company Artemovsk Teploset, which provided services to 85,000 Artemivsk citizens, was in a deplorable state. Most of the district heating equipment and networks badly required modernization. If heat energy was provided to Artemivsk citizens more or less on a stable basis, there was absolutely no hot water supply. According to Artemivsk Mayor Alexiy Reva, the citizens refused to pay UAH 11 for 1 cubic meter of hot water. The high price was the result of the high depreciation of the Artemivsk district heating system. Ukmerges Energija was expected to install module individual heat supply stations to reduce the cost of the hot water.

The two years of the Artemovsk Teploset concession have not brought impressive changes in the quality of the heat energy service provision. Yet the city authorities are satisfied with the PPP. The annual concession payment to the city budget is UAH 0.5 million. According to the concession agreement, the tariff does not change if the tariff components stay the same. The current tariff for heat energy supply is economically justifiable and includes a 10% profit margin. (Tariffs for heat energy are provided in Ukmerges Energija, as concessionaire, replaced heat pipelines, upgraded boiler houses, and installed new boilers. According to the first Deputy Mayor of Artemivsk, Serhiy Goncharov, the concessionaire has invested UAH 13 million in the modernization of the district heating system. This PPP has proven especially beneficial for the city in the absence of funding for the housing and communal service sector from the State budget.

As of 2009 Artemivsk is the only city in Ukraine whose district heating system is operated under concession, although as a result of the experience there, many Ukrainian municipalities got interested in the concession as a form of PPP. The *Kharkiv* city council has approved the decision to lease concessions for Kharkiv District Heating Networks, Water, and Kharkivkommunochistvod. According to Kharkiv Mayor Michail Dobkin these investment propositions have already been presented in the UK, Russia, and China and attracted the interest of potential investors. Kharkiv authorities are conducting serious discussions with the French firm Viola, which controls water supply in Berlin, Bucharest, Budapest, Prague, and several cities in France. However, Mr. Dobkin believes that the current political situation in Ukraine does not encourage foreign investors to come to Ukraine.

7.2 Leasing

Successful examples of PPP with leasing are found in the cities of *Chernihiv* and *Kramatorsk*.

Chernihiv stands out in terms of district heating system ownership. Its system is operated by two private companies: Oblteplokomunenerho OJSC and the TehNova Ltd. The latter is leasing the Chernihiv Heat Electric Generation Plant and heats 2400 thousand square meters in the city. Chernihiv is among the few cities in Ukraine that has uninterrupted heat energy and hot water service provision. The director of the communal power generation unit of the Chernihiv Heat Electric Generation Plant leased by the TehNova Ltd., Oleksander Bilobrov, takes credit for it. In particular, he stated that due to the TehNova's work, the city of Chernihiv was ready for the heating season in the fall 2009.

The city authorities are pleased with the cooperation with TehNova Ltd. in the framework of the leasing form of PPP in district heating. According to Chernihiv Mayor Oleksander Sokolov, when the PPP started the city administration had doubts about its success. After a short period of time the city was convinced that the new management was capable of a breakthrough at the Chernihiv Heat Electric Generation Plant. One of the significant achievements of the seven-year PPP is the implementation of the ambitious project in terms of its importance and cost, the construction of the new complex to move the Heat Electric Generation Plant to the alternative fuel, coal. The TehNova Ltd. invested UAH 57 million in the construction of the coal defrost and unload premises. As a result of this technological advancement, the process of car unloading has been significantly expedited. Before it took several days of work and involved high costs to unload coal cars, especially in winter time. In addition, the company had to pay high fines for demurrage of cars. These two factors decreased the cost effectiveness of the heat energy production. According to Mr. Bilobrov, now it is sufficient to have 50-60 tons of coal as a reserve; the remaining amount of coal can be received by the Chernihiv Heat Electric Generation Plant any time. Putting the car unloading complex into operation is an important step towards plant modernization and facilities upgrade. The investor has far-reaching and ambitious plans. Currently the Chernihiv Heat Electric Generation Plant provides hot water to 80% of the Chernihiv population in summer time. They aim to provide 100% of heat energy services in the winter time.

The implementation of modernization programs in the Chernihiv communal sector is possible due to investors. The head of the housing and communal department of Chernihiv, Vadym Antoshyn, commented on the state of preparation for the 2009 heating season: "We have not received any funds from the local budget to prepare the city for the heating season. Communal services modernization programs are funded by private investors. The other source is the payment of communal bills."

The connection between the payment of communal bills and the quality service provision of heat energy is confirmed by the other private district heating operator in Chernihiv Oblteplokomunenergo OJSC. The Chernihiv population's debt for heat energy and hot water services amounted to UAH 14 million in October 2009. The total debt of the Oblteplokomunenergo OJSC for gas payment was UAH 30 million, 17 million of which can be discharged by the company, with the remaining 13 million being sought either as credits or state compensation.

The problem of paying for gas to produce heat energy is common in Ukrainian municipalities, regardless of the type of ownership of the district heating operators. This contributes to dispelling a myth about superior efficiency of the private operators.

In Kramatorsk, Donetsk oblast, we find another type of PPP arrangement in district heating. In 2006 the American-based company Contour Global and the communal company Bridge, which owned 40% of Kramatorsk Electric Generation Plant assets, created a joint venture called Kramatorskteploenergo. The private investor's share in the joint venture was close to 60%.

The motivation of the Kramatorsk city authorities was to attract badly needed financing for the electric generation plant modernization. The situation in the Kramatorsk Electric Generation Plant was no different than in other heat generation enterprises: 60% of the equipment was obsolete, 30% of the equipment was approaching the end of its lifespan. Contour Global immediately announced its intention to build a new heat generation plant and pave modern district heating system networks.

Previously, the 70-year old Kramatorsk Electric Generation Plant produced 120 MW of electric energy with huge disruptions and could not provide reliable and stable heat energy to its consumers. Contour Global invested \$ 3.2 million to modernize one of its steam boilers, which allowed production of a reliable 60 MW electric energy and provided more cost efficient district heating for Kramatorsk consumers. The rehabilitation of the steam boiler along with other improvements increased the efficiency of solid fuel's use up to 84%. Contour Global plans on investing in modernization of the other steam boiler and cooling tower to reach the generation of 120 MW electric energy and 320 metric tons of steam per hour for the Kramatorsk district heating system.

It is worth noting that the modernization at the Kramatorsk Electric Generation Plant was the first in the history of Kramatorsk Electric Generation Plant's operation.

7.2.1 Unfavorable PPP Leasing Experiences

In *Kamianets-Podilskyi* the operation of the district heating system under the leasing agreement did not work well. As a result of the more than one-year law suit, in October 2009, the leasing agreement between the district heating owner, the city of Kamianets-Podilskyi, and the private operator Teplovodoenergiya CJSC was terminated and property worth UAH 38 million was returned to communal ownership. As explained by the city authorities, the reason for such a decision was the absence of the promised investment in the district heating infrastructure, deteriorating heating networks, and rising tariffs. (In 2007 the tariff for heat energy in Kamianets-Podilskyi was among the highest in Ukraine.) The management of Teplovodoenergiya CJSC repeatedly talked about unprofitability of the heat energy supply business in Kamianets-Podilskyi, justifying rising tariffs. Kamianets-Podilskyi Mayor Anatoliy Nesteruk is confident that communal ownership of the district heating system has provided better service delivery. The city attracted World Bank credit on favorable terms to modernize the district heating system in the city.

Another negative experience of PPP in district heating is found in *Lutsk*. During the five years of operation, the private provider repeatedly failed to provide hot water to more than 40,000 consumers, who reportedly paid for the service. In 2008 the Lutsk community demanded that city authorities return the district heating system to communal ownership and restore hot water supply. Two years of litigation have not yielded expected results. The residents of the Volyn oblast capital became hostages of the trivial arguing between city administration and private company officials for non-payment of the provided services.

Background

In 2004 the Lutsk city council permitted the communal operator of the district heating, Lutskteplo, to form Lutskteploenergo Ltd. and contributed the boiler house to the statutory fund of the newly established firm. Thus, the boiler house became the property of the private entity. The payment scheme was as follows: Lutsk residents pay the communal operator Lutskteplo for the provided heat energy and hot water. The latter purchases gas for its boiler houses from the NAK Naftogas and heat carrying agent and hot water from Lutskteploenergo Ltd. for its consumers in the Zavokzalnyi rayon of Lutsk. The communal operator Lutskteplo reportedly paid late and incompletely for its liabilities, while the percentage of payment for the heat and hot water by Lutsk residents is high.

The Kamianets-Podilskyi and Lutsk cases appear to be politically driven. The decision to change the district heating system ownership was supported by the old city administration. It is obvious in both cases that the new city administration has a different perspective and different district heating agenda.

In *Shostka*, of Sumy oblast, 85% of the heat energy and hot water services are provided by the Shostka Enterprise Kharkivenergoemont Ltd.

The history of Kharkivenergoemont goes back to 1946. It was founded as the state plant for the purpose of restoring and modernizing energy facilities destroyed during World War II. In 1994 the plant was privatized. Among the current clients of Kharkivenergoemont are heat power plants and hydroelectric plants in Ukraine, CIS, Europe, and Asia. Kharkivenergoemont participated in the PPP project on the rehabilitation of the turbo-generator at the Shostka Combined Heat and Power Plant in 2001. This project was the first example of the use of the innovative PPP approach in the heat supply sector. The Sumyoblenergo OJSC, which was leasing the Shostka Combined Heat and Power Plant (being in communal ownership) in 2001, attracted credit of UAH 5 million from Big Energia Bank and involved strong technical expertise from a number of Ukrainian companies. The project results were impressive: the generation capacity of the modernized Shostka Combined Heat and Power Plant increased to 80 MW, which provided heat energy and hot water to 70% of Shostka residents as well as electricity to the wholesale energy market of Ukraine.

In 2006 Kharkivenergoemont leased Shostka Combined Heat and Power Plant for 10 years. However, the 10-year lease agreement of the Shostka Combined Heat and Power Plant ended in 2009 ahead of schedule. According to official data, Shostka Enterprise Kharkivenergoemont Ltd. has been in litigation with Shostka city

authorities over tariffs. In 2008 despite the official opinion of the State Inspection on the Control over the prices in Sumy oblast regarding the economic justified rise in tariffs city authorities returned the tariffs to the level of tariffs for heat energy and hot water in 2006. In 2008 Kharkivenergomont has incurred losses of almost UAH10 million, and in 2009 it withdrew its equipment from the Shostka Combined Heat and Power Plant.

For further reference: in 2009 to fulfill their investment obligations, Shostka Enterprise Kharkivenergomont Ltd. continued installation work on the steam generating unit at the Shostka Combined Heat and Power Plant that will operate on the alternative fuel waste wood.

One of the characteristic features of PPP is the delivery of better services at lower prices for the public. The case of *Zhovty Vody*, Dnipropetrovsk oblast, demonstrates the opposite.

In 2006 the Zhovty Vody city administration leased the Combined Heat and Power Plant property complex to Prostor C Ltd. (Prostor C Ltd.'s statutory fund was UAH 25,000.) In the heating season of 2006-2007 Prostor C Ltd. was indebted to gas provider Gas off Ukraine for consumed gas. The residents of Zhovty Vody paid for heat energy and hot water services up to 90% of the accrued bills. As a result of the incurred debt, the 2007-2008 heating season started late. Heat energy was not provided when temperatures dropped, by the time of the frost. The residents of Zhovty Vody heated their apartments using electric heaters, which caused disruption in the electric networks. As a result, several districts were left without electricity for weeks. In 2008 the Combined Heat and Power Plant property complex was returned to communal property as well as UAH 12 million of accumulated debt. The residents of Zhovty Vody accuse the city leadership and Prostor C Ltd.'s administration in mismanagement that led to the risk of no district heating in the city.

7.3 PPP Water Projects in Ukraine

The limited Ukrainian experience in PPP development in district heating can be further illuminated by the PPP experience in water supply sector. Two examples provided below help generalize the scope of issues common for PPP projects in the communal service sector.

The story of the lease of the public enterprise Odesvodokanal for 49 years by Infoks Ltd. caused a great stir. In 2003 Mayor of Odesa Ruslan Bodelan facilitated this transaction on the condition that Infoks Ltd. would invest UAH 500 million over seven years. The decision of *Odesa* local authorities resonated on both local and national levels in Ukraine: there were talks about hidden privatization and demands to conduct an independent study of the lease agreement terms. In 2006 the new Odesa city administration applied to the oblast court to terminate the lease agreement. The claim was met and later the case was appealed by Infoks Ltd. A year later the city administration reached a compromise with the private investor. Now Infoks Vodokal (the current name of the investor) supplies water to Odesa, Illichivsk, Belhorod-Dnistrovkyi, Ovidipol, Teplodar, Yuzhny, and Beliaivka and the change of ownership

is not a question any more. The consumers did not feel the difference in the change of the *vodokanal* ownership, except the rising water tariffs.

A similar situation exists in *Kirovohrad*. In 2004 Kirovohradoblenergo OJSC and its affiliate Ukrainian Innovative Finance Company established Water Management Ltd., which succeeded in leasing *vodokanal* after the failure of Kirovohradoblenergo OJSC to lease Kirivohrad *vodokanal* in 2001. Later, in 2005, Kirovohrad oblast administration conducted a competition for investment projects in water and sewage management and selected the Austrian company Inframan GmbH to establish a joint venture on the basis of the oblast water supply systems. The mayor of Kirovohrad spoke against the investment deal, which made the Austrian investor withdraw. In March 2006 Water Management Ltd. leased the water system complex for 49 years. The cost of the water system complex was assessed at UAH 45.3 million, which is approximately five times less than the Mykolaiv *vodokanal* cost estimation the same year. It should be noted that the lease payment fee is calculated on the basis of the lease object cost. In November 2006 the new city council wanted to terminate the lease agreement based on lease payment arrears. Later the council's zealotness abated, and the leaseholder continues to manage the Kirovohrad water supply system. So far no large amounts of funds have been invested in the water supply system modernization, yet payment discipline has improved, and that is the achievement of the private investor.

8. Lessons

8.1 Lack of Stability and Predictability

A long-term relationship between public and private sectors is a success if both parties focus on the stability of their relationship. This is achieved through the continuity and quality of the service provision by the private partner and the stability of the legal and regulatory framework of the public partner.

8.1.1 Recommendation

Prior to forming any PPP agreement, public authorities should open the district heating market to competition among private firms and enforce the procurement process of open access, transparent bidding, and equal treatment. Competition from foreign operators is highly welcomed. It strengthens local competition, encouraging Ukrainian operators to perform better.

8.2 Lack of Trust and Sustainable Cooperation

In order for a long-term contract to endure up to 50 years of cooperation, trust between parties and population is essential. During many years of cooperation many events may occur, yet parties should stay partners, not opponents. Trust requires a number of basic things to be in place, which were missing in the problematic PPPs indicated above:

- Clear allocation of roles;

- Predictable framework that reduces the risk of changing the rules of the game;
- Transparency and ease of obtaining information through well-elaborated procedures;
- Consultation with population to determine the level of involvement of the private partner;
- Strict respect of autonomy given to the private partner;
- Clear PPP performance evaluation criteria;
- Clear procedure to solve potential misunderstandings;
- A contract review mechanism to take into account new developments in the PPP; and
- Development of realistic investment programs.

8.2.1 Recommendation

To build trust among major PPP stakeholders, government authorities should focus on the following.

- Promote transparency and consultations with the population on the involvement of the private operator.
- Develop realistic and pragmatic investment programs based on cost-benefit analyses and assessment of reliability of data and viability of PPP projects by the financial community.
- Develop a sound PPP contractual framework.

8.3 Lack of Financial Accountability and Risk Management

There are no special fiscal accounting and reporting procedures for PPP worldwide. This makes it difficult to evaluate the financial and economic performance of PPP arrangements and compare it with the performance of purely public and private operators. The reporting of private district heating operators with limited liability that dominates among PPP arrangements in the district heating sector in Ukraine is governed by private sector accounting rules, which do not require public disclosure of financial performance information, including income statement and balance sheet. Therefore, the assessment of the economic impact of private investors on the performance of the municipal district heating sector by independent analysts is highly complicated. A step forward in the financial accountability of the operators in the district heating market was the approval of the Resolution № 405 dated December 24, 2008, of the Ministry of Housing and Communal Services on monitoring the state of the housing and communal service sector in 2009. According to the resolution, district heating operators of all types of ownership have to report to the Ministry of Housing and Communal Services on financial indicators of their activity. However, these documents are not available to the general public.

8.3.1 Recommendation

Involvement of the private sector in public service provision, such as district heating, through PPP may have hidden financial risks. IMF experts believe that “there remains a substantial risk that, in designing PPPs, value-for-money considerations are traded off against other considerations. This would both defeat the objective of using PPPs for efficiency gains and disguise the medium-to-long-term implications of many PPPs for public finances.” To counteract these risks, a comprehensive disclosure of the known and potential future costs of all PPPs for public finances should be encouraged. Specifically, as regards disclosure, Box 1 sets out proposed requirements for PPPs, while Box 2 deals with the comprehensive disclosure requirements for guarantees.

Box 1. Detailed disclosure requirements for PPPs

For each PPP project or group of similar projects, government budget documents and year-end financial statements should provide information on the following:

- **Future service payments and receipts (such as concession and operating lease fees) by government specified in PPP contracts for the following 20–30 years;**
- **Details of contract provisions that give rise to contingent payments or receipts (such as guarantees, shadow tolls, profit-sharing arrangements, and events triggering contract renegotiation), with the payments and receipts valued to the extent feasible;**
- **Amount and terms of financing and other support for PPPs provided through government on-lending or via public financial institutions and other entities (such as special purpose vehicles (SPVs)) owned or controlled by government; and**
- **How the project affects the reported fiscal balance and public debt, whether PPP assets are recognized as assets on the government balance sheet, and whether PPP assets are recognized as assets on the balance sheet of any SPV or the private sector partner.—IMF, 2007**

Box 2. Disclosure requirements for guarantees

Irrespective of the basis of accounting, information on guarantees should be disclosed in budget documents, within-year fiscal reports, and year-end financial statements. Guarantees ideally should be reported in a fuller Statement of Contingent Liabilities that is part of the budget documentation and accompanies financial statements, with updates provided in fiscal reports.

A common core of information to be disclosed annually for each guarantee or guarantee program should include the following:

- A brief description of its nature, intended purpose, beneficiaries, and expected duration;
- The government's gross financial exposure and, where feasible, an estimate of the likely fiscal cost of called guarantees;
- Payments, reimbursements, recoveries, financial claims against beneficiaries, and any waivers of such claims; and
- Guarantee fees or other revenue received.

In addition, budget documents should provide the following:

- An indication of the allowance made in the budget for expected calls on guarantees; and
- A forecast and explanation of new guarantees to be issued in the budget year.

During the year, details of new guarantees issued should be published (for example, in the Government Gazette) as they are issued.

Within-year fiscal reports should indicate new guarantees issued during the period, payments made on called guarantees, and the status of claims on beneficiaries, and update the forecast of new guarantees to be issued in the budget year and the estimate of the likely fiscal cost of called guarantees.

Finally, a reconciliation of the change in the stock of public debt between the start and end of the year should be provided, showing separately that part of the change attributable to the assumption of debt arising from called guarantees.—*IMF, 2007*

9. Conclusion and Further Actions

There are Ukrainian examples of effective and ineffective district heating systems in private ownership and PPP arrangement. The examples from central, eastern, and western European countries show a variety of different ownership and organizational models. There are very well managed district heating utilities operated by both private and public sectors that have competitive prices and energy efficient operation, and provide good quality services.

Despite widespread belief about the private sector's superior efficiency, the IMF points out: "*While there is an extensive literature on this subject, the theory is ambiguous and the empirical evidence is mixed.*"¹ The review of the empirical evidence by Finnish economist Johann Willner shows that public ownership is at least as efficient in more than half of the studies, and Willner even concludes that political intervention may produce better results in oligopolistic markets, even if it creates

¹ International Monetary Fund Public-Private Partnerships March 12, 2004;
<http://www.imf.org/external/np/fad/2004/pifp/eng/031204.htm>

‘over-manning’.² Public finance is still used by many countries, including most developed ones, to raise funds for infrastructure investment. This is done by national and local governments by borrowing from banks and issuing bonds. Government authorities have the advantage of being able to borrow money more cheaply than private companies. For these reasons public sector borrowing is an important way of channeling investment in infrastructure for services such as district heating.

However, PPPs in district heating look especially attractive to the Ukrainian Government, as it is restricted in its current ability to spend on reforming the district heating sector but unrestricted in its ability to promise reforms and future spending. Thus, the development of PPPs will allow the central and local governments to avoid spending on district heating reforms without forgoing its benefits.

The analysis of the current situation in district heating PPP development points to the following areas, which require further improvement to ensure the success of future PPP projects in this sector.

9.1 Regulatory and Contractual Framework

Though Ukraine has a sound legal framework that covers most aspects of PPP, the Yurenergo legal experts believe that the issues requiring legal settlement are:

- Lifting a ban on leasing communal and state heat supply infrastructure, such as boiler houses and heating networks; and
- Allowing corporatization of communal heat supply infrastructure.

More importantly, the Ukrainian case studies point to the importance of having an effective contractual framework, which will effectively define distribution of risks between parties according their ability to assess control and cope with them; set up procedures for re-negotiation of the contract when facing unforeseen events; offer dispute settlement mechanisms to avoid disruption in the service provision; and determine the level of control by the public sector to guarantee the adequate level of the private sector’s performance.

9.2 Institutional Capacity to Prepare District Heating Projects

Faced with budget constraints, Ukrainian local governments oftentimes find private financing the only feasible and cheapest option. They feel like they have to choose between privately-financed district heating and no district heating. This factor significantly reduces the need for a sound cost-benefit analysis and accounting of all risks and costs over the long run. Entering into PPP as a way of attracting investment without properly considering the longer-term economic, financial, and social consequences almost invariably leads to problems. Therefore, Ukrainian government authorities need to be trained on how to assess overall costs and benefits of the investment project, focusing on all aspects of sustainable community development.

² Johan Willner, “Ownership, efficiency, and political interference,” in *European Journal of Political Economy*, vol.17, no. 4 (2001), pp.723-748.

District heating projects often have important environmental and social repercussions that need to be properly accounted for, including through impact assessments.

9.3 Transparency and Accountability

Corrupt practices in privately operated district heating may be found for a variety of reasons, one of which is the lack of competition in the district heating sector. Political protection and intervention can lead to corruption in any phase of a PPP project: design, awards, procurement, and operation. In Ukraine corruption in the communal service sector is particularly problematic, since involvement of a private company is subject to public criticism (Lutsk, Kamianets-Podilskyi, and Zhovty Vody cases). Lack of transparency in the award and procurement processes amplifies such criticism. The selection of an inefficient private partner will create financial burdens that will be eventually shifted to the end consumer. Therefore, much needs to be done to ensure transparency, financial and operational accountability, and the use of checks and balances to safeguard against corruption in PPP arrangements.

***Attachment I: List of Sector Basic Enterprises
(according to data of the Ministry
of Housing and Communal
Services of Ukraine)***

List of Sector Basic Enterprises (according to data of the Ministry of Housing and Communal Services of Ukraine)

	Oblast	Communal heating companies	Water supply	Water removal	Housing services
1	Autonomous Republic of Crimea	Krymteplokomunenergo, Simferopol	VUVKG	VUVKG	Central district ZhEO, Simferopol
2	Vinnitsa	Vinnitsamiskteplokomunenergo	Vinnitsavodokanal	Vinnitsavodokanal	
3	Volyn	Lutskteplo	Lutskvodokanal	Lutskvodokanal	Lutsk ZhKP
4	Dnipropetrovsk	Dnipropetrovsk City Heating Networks	Dniprovodokanal	Dniprovodokanal	Dnipropetrovsk housing services department
5	Donetsk	Miskteplomerezha	Donetskmiskvodokanal	Donetskmiskvodokanal	Donetsk housing services department
6	Zhytomyr	Zhytomyrteplokomunenergo	VUVKG	VUVKG	
7	Zakarpattya	Uzh-Teplo	Uzhhorodvodokanal	Uzhhorodvodokanal	Uzhhorod ZhRER
8	Zaporizhya	City Heating Networks	Vodokanal	Vodokanal	Zaporizhya KP VREZhO #1-11,13
9	Ivano-Frankivsk	Ivano-FrankivskTEplokomunenergo	Ivano-Franskivsk Vodoecotekhprom	Ivano-Franskivsk Vodoecotekhprom	
10	Kyiv	Bilotserkivteplomerezha	BilaTserkvaVodokanal	BilaTserkvaVodokanal	Bila Tserkva ZhEK #6
11	Kirovohrad	Kirovohradteplo	Kirovogradvodokanal	Kirovogradvodokanal	Kirovograd GUZhKG
12	Luhansk	Teplokomunenergo	Luhanskvoda	Luhanskvoda	Lugansk MKP Zhylservis
13	Lviv	Lvivteploenergo	Lvivvodokanal	Lvivvodokanal	
14	Mykolaiv	Mykolaivobiteploenergo	Mykolaivvodokanal	Mykolaivvodokanal	
15	Odesa	Odesateplokomunenergo	Infoks	Infoks	Odesa UZhKG
16	Poltava	Poltavateploenergo	Poltavavodokanal	Poltavavodokanal	Plotava GZhED #8
17	Rivne	Komunenergiya	Revneoblvodokanal	Revneoblvodokanal	Revne 8 ZhKP
18	Sumy	Sumyteploenergo	Miskvodokanal	Miskvodokanal	
19	Ternopil	Ternopilteplokomunenergo	Ternopilvodokanal	Ternopilvodokanal	
20	Kharkiv	Kharkiv Heating Networks	Voda	Voda	Kharkiv housing services department
21	Kherson	Khersonteploenergo	VUVKG	VUVKG	Ukraina LLC, Kherson
22	Khmelnysky	Khmelnyskteplokomunenergo	VKG	VKG	
23	Cherkasy	Teplo	Cherkasyvodokanal	Cherkasyvodokanal	
24	Chernivtsi	Chernivsiteplokomunenergo	Chernivtsivodokanal	Chernivtsivodokanal	Chernivtsi KZhREP
25	Chernigiv	Chernigivteplokomunenergo	Chernigivvodokanal	Chernigivvodokanal	Communal enterprise Novozavodske, Chernigiv
26	Kyiv city	Kyivenergo	Kyivvodokanal	Kyivvodokanal	Housing services department
27	Sevastopol city	Sevteploenergo	Sevmiskvodokanal	Sevmiskvodokanal	

List of Registered Heat Energy Producers of Ukraine

Code of the type of economic activities 40.30.0 - Steam and hot water supply

Private form of ownership

#	EDRPOU code	Name	Location
1	1353462	LLC Raysilkomunkhoz	Amvrosiivka, Donetsk oblast
2	1354929	LLC Maryinski Raysilkomungosp	Krasnogorivka, Donetsk oblast
3	2139015	LLC Tokmak heating network	Tokmak, Zaporizhya oblast
4	2139038	Lease enterprise Pologyteplomerezha	Pology, Zaporizhya oblast
5	2648343	Collective enterprise Yaltakurortteploenergo	Yalta, Crimea
6	3337007	CJSC Gorlivskteplomerezha	Gorlivka, Donetsk oblast
7	3337480	Lease enterprise Donetskmiskteplomerezha	Donetsk
8	3349565	Lease oblast enterprise Mykolaivteplokcomunenergo	Mykolaiv
9			
10	3350516	CJSC Odesteplokomunenergo	Odesa
11	3352449	CJSC Heating Networks Enterprise	Sumy
12	3357671	OJSC Oblteplokcomunenergo	Chernigiv
13	3358564	Lease enterprise Alushtateplokcomunenergo	Alushta, Crimea
14	3358593	Lease enterprise Krymteplokcomunenergo	Simferopol
15	3534400	LLC Academteploenergo	Kyiv
16	4786664	Lease enterprise Prykarpaturortteploenergo	Morshin, Lviv oblast
17	5400081	Lease enterprise Silkomungosp	Okhtyrka, Sumy oblast
18	5434358	Multi-sector communal services enterprise	Myrgorod, Poltava oblast
19	5445468	Lease enterprise Novograd-Volynskteplokomenenergo	Novograd-Volynsky, Zhytomyr oblast
20			
21	5471164	Energy supplying company Odesaoblenergo	Odesa
22	5478806	Lease enterprise Zhytomyrteplokcomunenergo	Zhytomyr
23	5496655	OJSC Promenergovuzol	Dnipropetrovsk
24	5539040	Lease enterprise of heating networks	Malyn, Zhytomyr oblast
25	5541114	Lease enterprise of heating networks	Melitopol, Zaporizhya oblast
26	5541120	CJSC Berdyansk enterprise of heating networks	Berdyansk, Zaporizhya oblast
27	5541137	CJSC Vasylivkateplomerezha	Vasylivka, Zaporizhya oblast
28	5802750	OJSC Promenergovuzol	Ivano-Frankivsk
29	13344480	Small enterprise Ivanychi Teplo	Ivanychi, Volyn oblast

Code of the type of economic activities 40.30.0 - Steam and hot water supply

Private form of ownership

#	EDRPOU code	Name	Location
30	13566750	Lease enterprise of heating networks	Olevsk, Zhytomyr oblast
31	13607608	Collective enterprise Teplomerezha	Zaporizhya
32	13622447	LLC Orikhivteplomerezha	Orikhiv, Zaporizhya oblast
33	13919087	Subsidiary Bilgorod-DnistrovskTeplokomunenergo	Bilgorod-Dnistrovsky, Odesa oblast
34	14000280	Lease enterprise Boiler house of the Northern industrial hub	Sumy
35	14027356	Okhtyrka heating networks	Okhtyrka, Sumy oblast
36	14085922	CJSC Heat energy center of Rogansky industrial hub	Kharkiv
37	14151671	Small enterprise Teplomerezha	Gorodok, Khmelnytska oblast
38	14151777	Small enterprise Teplokomunenergo	Yarmolyntsi, Khmelnytska oblast
39	14151820	Small enterprise Teplovyk	Volochysk, Khmelnytska oblast
40	14180891	Small multi-sector enterprise Teplomerezha	Khrystynivka, Cherkasy oblast
41	19282082	CJSC Shevchenkivske heating networks enterprise	Zaporizhya
42	19282099	CJSC Teploenergiya	Zaporizhya
43	19282107	CJSC Leninske heating networks enterprise	Zaporizhya
44	19282125	CJSC Zhovtneve heating networks enterprise	Zaporizhya
45	19282171	Prymorsk lease enterprise of heating networks	Prymorsk, Zaporizhya oblast
46	19282188	Mykhailivka lease enterprise of heating networks	Mykhailivka , Zaporizhya oblast
47			
48	19335967	Truskavetskurortteploenergo	Truskavets, Lviv oblast
49	19396408	Yaremcha lease enterprise on heat energy supply	Yaremcha, Ivano-Frankivsk oblast
50	19408548	Private communal enterprise Teplokomunservis	Irpin, Kyiv oblast
51	20183876	Subsidiary Department of communal boiler houses and heating networks	Pervomaysk, Lugansk oblast
52	20297290	LLC Tero	Yuvileyne, Dnipropetrovsk oblast
53	20780715	Branch Truskavetspivdenenergo	Truskavets, Lviv oblast
54	20978995	Subsidiary Illichivskteplokomunenergo	Illichivsk, Odesa oblast
55	21336282	Lease enterprise Western boiler house	Khmelnytsky
56	21418407	LLC Teplomerezha	Chernivtsi
57	22049774	CJSC Zhytomyrteposervis	Zhytomyr
58	22715521	OJSC Volodar	Kharkiv
59	23774046	LLC Kona	Donetsk
60	23880647	LLC Zaporizhya municipal energy company	Zaporizhya
61	23982715	LLC Rus	Selidove, Donetsk oblast
62	24497258	Subsidiary Eastern-Crimea energy company	Scholkinе, Crimea
63	24512934	LLC Stepnogorsk heating networks	Stepnogorsk, Zaporizhya oblast

Code of the type of economic activities 40.30.0 - Steam and hot water supply

Private form of ownership

#	EDRPOU code	Name	Location
64	24554235	Production site of OJSC Oblteplokomunenergo	Gorodnya, Chernigiv oblast
65	24691227	Subsidiary of lease enterprise Dzhankoyteplokomunenergo	Nyzhnyogirsky, Crimea
66	24907756	Collective enterprise andriivska teplomerezha	Andriivka, Zaporizhya oblast
67	24911806	LLC Komyshevakhateplomerezha	Komyshevakha, Zaporizhya oblast
68	25020009	LLC Viprom	Dnipropetrovsk
69	25043157	Subsidiary Reniteplokomunenergo	Reni, Odesa oblast
70	25353411	Association of apartment owners Zavodska	Zboriv, Ternopil oblast
71			Vinnitsa
72	25497875	LLC Teplokomunenergo Mayak	Vinnitsa
73	25728369	Subsidiary Chygyryn heating networks	Vitove, Cherkasy oblast
74	26177948	Subsidiary of Krymteplokomunenergo	Rozdolne, Crimea
75	26178089	Subsidiary of Krymteplokomunenergo	Feodosia, Crimea
76	26178238	Subsidiary of Krymteplokomunenergo	Simferopol
77	26178681	Subsidiary of Krymteplokomunenergo	Yevpatoria, Crimea
78			Kerch, Crimea
79	26224872	Subsidiary of Krymteplokomunenergo	Kerch, Crimea
80	26225110	Subsidiary of Krymteplokomunenergo	Dzhankoy, Crimea
81	26226262	Subsidiary of Krymteplokomunenergo	Alushta, Crimea
82	26273184	Subsidiary of Krymteplokomunenergo	Yalta, Crimea
83	26364298	Private enterprise Turbo	Kotovsk, Odesa oblast
84	26407242	Subsidiary of LLC Teplopostachannya	Varva, Chernigiv oblast
85	26407472	Subsidiary of OJSC Volodar	Varva, Chernigiv oblast
86	26420544	Subsidiary of OJSC Volodar	Kegychivka, Kharkiv oblast
87	26420550	Subsidiary of LLC Teplopostachannya	Kegychivka, Kharkiv oblast
88	26452707	Subsidiary of OJSC Volodar	Volodymyrets, Rivne oblast
89	26542514	LLC Odesa enrgy company	Odesa
90	26544890	Subsidiary of OJSC Volodar	Sevastopol
91	26544909	Subsidiary of LLC Teplopostachannya	Sevastopol
92	26555824	Subsidiary of LLC Teplopostachannya	Kherson
93	30072378	LLC Teplotehnik Ltd.	Bar, Vinnitsa oblast
94	30119688	Lease enterprise Rozdolneteplokomunenergo	Rozdolne, Crimea
95	30129193	Private enterprise Niogara	Illichivsk, Odesa oblast
96	30191497	Private enterprise Svit-Energo	Poltava
97	30391181	LLC Energiya	Gorodok, Khmelnytska oblast

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#	EDRPOU code	Name	Location
98	30473782	CJSC Energiya-Service	Lutsk
99	30592660	CJSC Energoprom	Kharkiv
100	30830091	Prive enterprise Promteplotekhservis	Poltava
101	30834672	Subsidiary Uman heating networks	Uman, Cherkasy oblast
102	30864838	LLC Teplo	Bilopillya, Sumy oblast
103	30940824	Subsidiary Kiliateplokcomunenergo	Kilia, Odesa oblast
104	30981279	Subsidiary Baltateplokcomunenergo	Balta, Odesa oblast
105	31065995	LLC Sumyteploservis	Sumy
106	31067458	LLC Melitopol-Energo	Melitopol, Zaporizhya oblast
107	31165782	Self-supporting enterprise Chygyryn heating networks	Chygyryn, Cherkasy oblast
108			
109	31359133	LLC Putyvlteploenergo	Putyvl, Sumy oblast
110	31374434	LLC Energiya-Servis	Romny, Sumy oblast
111	31476889	LLC Kirovsky housing district	Mogyliv-Podilsky, Vinnitsa oblast
112	31554757	Private enterprise Teplo	Vylkove, Odesa oblast
113			
114	31555944	LLC Hospital boiler houses	Kharkiv
115	31557501	Subsidiary Volodar-Kharkiv	Kharkiv
116	31576058	LLC Main heating networks 2001	Zaporizhya
117	31583526	LLC Raykomunservis	Boguslav, Kyiv oblast
118	31589837	LLC Teplovodpostach	Konotop, Sumy oblast
119	31589858	LLC Termo	Konotop, Sumy oblast
120	31615112	CJSC Teploservis	Gorlivka, Donetsk oblast
121	31624635	LLC Teplomerezha	Uzhgorod
122	31638098	Private enterprise Prymorskteploenergiya	Prymorsk, Zaporizhya oblast
123	31638103	Private enterprise Teploservis	Prymorsk, Zaporizhya oblast
124	31654523	LLC Orikhivteplomerezha-2	Orikhiv, Zaporizhya oblast
125	31656138	LLC Komfort	Kolomya, Ivano-Frankivsk oblast
126	31672448	LLC Teploservis	Kharkiv
127	31675873	LLC Enetep	Pervomaysk, Lugansk oblast
128	31678853	LLC Svitlovodskpobut	Svitlovodsk, Kirovograd oblast
129	31713080	Private enterprise Energokomunservis	Borodyanka, Kyiv oblast
130	31718199	LLC Tepos	Shostka, Sumy oblast
131	31766986	LLC Teplokcomunmerezha	Irpin, Kyiv oblast

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#	EDRPOU code	Name	Location
132	31788114	LLC Sumy-Teplo	Sumy
133	31790516	LLC Teploenergozberezhennya	Ivano-Frankivsk
134	31824859	LLC Temp-Energiya	Dnipropetrovsk
135	31833245	LLC Teplokomunenergo Mayak	Pershotravensk, Zhytomyr oblast
136	31834301	Private enterprise Teplokomunservis	Bilovod, Sumy oblast
137	31884200	CJSC CHP	Nikopol, Dnipropetrovsk oblast
138	31888430	Private enterprise Vatra	Orikhiv, Zaporizhya oblast
139	31930780	LLC Sumygasteploinvest	Sumy
140	31943103	LLC BPF-Termo	Dolyna, Ivano-Frankivsk oblast
141	32024017	LLC Teploenergo	Krasnopillya, Sumy oblast
142			
143	32028619	LLC Energiya	Odesa
144	32032028	LLC Teploservis	Kharkiv
145	32038920	Private enterprise Teplo	Romny, Sumy oblast
146	32050838	LLC Teplotekhservis	Khartsyzsk, Donetsk oblast
147	32083093	CJSC Teplogeneratsia	Nikopol, Dnipropetrovsk oblast
148	32168894	Subsidiary Moris-2	Vinnitsa
149	32168999	LLC Vinnitsa heating networks	Vinnitsa
150	32175676	LLC Teploenergetyk	Orikhiv, Zaporizhya oblast
151			
152	32184680	LLC Odesteplokomunenergo	Usatove, Odesa oblast
153	32191279	Private enterprise Teplokomfort	Romny, Sumy oblast
154	32191284	Private enterprise Teppar	Romny, Sumy oblast
155	32191305	Private enterprise Romnyteplo	Romny, Sumy oblast
156	32191310	LLC Tsentri-teplo	Romny, Sumy oblast
157	32292615	LLC Teploservis	Shargorod, Vinnitsa
158	32330670	Private enterprise Teploenergo	Vygoda, Ivano-Frankivsk oblast
159	32330838	LLC Podillya servis	Gorodok, Khmelnytska oblast
160	32357603	LLC Shakhtarske district village communal enterprise	Sadove, Donetsk oblast
161	32358633	Private enterprise Lubnyteploservis	Lubny, Poltava oblast
162	32402844	CJSC Teplorzerv	Synyak, Kyiv oblast
163	32471970	LLC Teplopostachannya	Kharkiv
164	32472822	Private enterprise Teplolyuks	Vinnitsa
165	32477710	Private enterprise CHP	Pavliv, Lviv oblast

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#	EDRPOU code	Name	Location
166	32478934	LLC Shostka-teplo	Shostka, Sumy oblast
167	32489815	LLC Darnytsyateploservis	Kyiv
168	32499226	Private enterprise OET	Brovary, Kyiv oblast
169	32500566	LLC Communal services department	Eskhar, Kharkiv oblast
170	32511269	Private enterprise Yara	Kalush, Ivano-Frankivsk oblast
171	32522464	LLC Rayteplo	Dvorichna, Kharkiv oblast
172	32540420	LLC Teploservis	Dniprodzerzhynsk, Dnipropetrovsl oblast
173	32567381	LLC Tsyurupynska CHP	Tsyurupynsk, Kherson oblast
174	32569607	Private enterprise Teploenergo	Dniprorudne, Zaporizhya oblast
175	32656694	LLC Teplo-Servis	Krasnogvardiyske, Crimea
176	32701301	Private enterprise Pologpostach-servis	Pology, Zaporizhya oblast
177	32718851	LLC Energoteploservis	Kirovograd
178	32746735	LLC Fedeks	Uzhgorod
179	32750668	LLC Nizhyntplomerezhi	Nizhyn, Chernigiv oblast
180	32794527	LLC Energosoyuz	Donetsk
181	32864976	LLC Brillion	Lugansk
182	32869230	LLC MRK Teploenergiya	Kharkiv
183	32926749	OJSC Energozakhyst	Dnipropetrovsk
184	32928070	LLC Khersontplomerezhi	Kherson
185	32942488	LLC Ukrteplotsentral	Donetsk
186	32962132	LLC Teplosoyuz	Kyiv
187	32964103	LLC Lutskteploenergo	Lutsk
188	33001645	LLC Kupyansk heating networks	Kupyansk, Kharkiv oblast
189	33008237	LLC Energy saving company	Lugansk
190	33015511	LLC Volodar-Kherson	Kherson
191	33063523	LLC Kvanta Prym	Artemivsk, Donetsk oblast
192	33072627	LLC Odesateplo	Odesa
193	33112905	LLC Slovteploservis	Slovyansk, Donetsk oblast
194	33127068	LLC Vinenergoresursy	Vinnitsa
195	33127906	Private enterprise Tores Termo	Torez, Donetsk oblast
196	33127948	LLc Gera	Torez, Donetsk oblast
197	33134803	Zhovtnevy district subsidiary of Municipal heating networks	Zaporizhya
198	33134824	Leninsky district subsidiary of Municipal heating networks	Zaporizhya
199	33134835	Komunarsky district subsidiary of Municipal heating networks	Zaporizhya

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#	EDRPOU code	Name	Location
200	33134850	Ordzhonikidzevsky district subsidiary of Municipal heating networks	Zaporizhya
201	33134866	Zavodsky district subsidiary of Municipal heating networks	Zaporizhya
202	33134887	Khortytsky district subsidiary of Municipal heating networks	Zaporizhya
203	33134892	Shevchenkivsky district subsidiary of Municipal heating networks	Zaporizhya
204	33199064	Private enterprise Termal	Andriivka, Zaporizhya oblast
205	33204828	LLC Energokomservis	Kharkiv
206	33205334	Subsidiary Zmiivsky boiler houses	Zmiiv, Kharkiv oblast
207	33205563	Subsidiary Chuguivteploenergo	Chuguiv, Kharkiv oblast
208	33267013	LLC Krymenergoservis 2004	Molodizhme, Crimea
209	33276756	LLC Rivneteplo	Rivne
210	33314733	LLC Teplo Energo Slavutych	Slavutych, Kyiv oblast

***Attachment II: Information on Tariffs for Heat
Supply Services at Basic
Enterprises as of September 1,
2009***

#	Oblast center	Actual cost (without VAT), UAH/Gcal		Approved tariffs with VAT, UAH								Level of actual cost compensation with approved tariffs	
				for population							tariff for heat energy for commercial consumers, UAH/Gcal		
		Population	Commercial consumers	tariff for heat energy, UAH/Gcal	tariff for heating, UAH/sq.m		tariff for hot water supply, UAH			Date of tariff introduction			
type of tariff (season, 2-rate, uniform)	amount of tariff				type of tariff (warming water, hot water supply (HWS))	per 1 m3 of water	per 1 person a month						
1	Simferopol	234.19	459.16	281.68	uniform	2.89	warming	14.72	59.91	8/10/2009	578.35	100.0%	105.0%
2	Vinnitsa	248.7	443.91	140,54*	2-rate	1,48/3,57	HWS	13.81	42.56	1/1/2009	429,42*	86.0%	139.2%
3	Lutsk	223.73	417.10	257.21	2-rate	2,15/4,0	HWS	14.78	53.95	4/1/2009	596.9	89.3%	119.3%
4	Dnipropetrovsk	264.23	346.50	244.31	uniform	6.12	warming	12.04	38.41	01.11.2008	417.04	77.1%	100.3%
5	Donetsk	248.3	248.30	241.4	season	6.2	HWS	14.3	-	10/1/2008	412.01	81.0%	138.3%
6	Zhytomyr	211.75	436.92	142,67*	2-rate	1,06/3,72	HWS	12.75	38.74	01.12.2008	537.97	86.0%	95.0%
7	Uzhhorod	559.24	760.82	250.93	season	5.91	warming	12.14	38.24	01.11.2007	778.89	37.4%	85.3%
8	Zaporizhya	181.23	397.76	220.91	2-rate	0,696/3,9	warming	8.448	39.9	1/1/2009	576.40	100.0%	120.8%
9	Ivano-Frankivsk	296.30	323.68	256.06	2-rate	1,70 / 136,35	warming	12.87	42.47	3 01.12.08	579.98	100.0%	149.3%
10	Bila Tserkva	243.84	468.30	245.23	2-rate	1,0/5,37	warming	13.82	50.44	12/1/2008	604.01	83.8%	107.5%
11	Kirovohrad	267.52	433.92	270.07	season	6.71	HWS	16.5	51.98	12/1/2008	669.73	84.1%	128.6%
12	Luhansk	269.55	427.26	279.51	2-rate	1,37/4,09	HWS	16.62	53.1	01.03.2009	575.4	86.4%	112.2%
13	Lviv	301.47	558.83	279.29	2-rate	1,3/5,28	HWS	17.77	51.02	01.01.2009	579.40	77.2%	86.4%
14	Mykolaiv	220.35	402.96	245.41	2-rate	1,27/4,76	warming	9.05	45.15	01.12.2008	487.07	92.8%	100.7%
15	Odesa	262.55	545.25	332.34	2-rate	1,67/2,76	HWS	10.39	59.59	01.01.2009	660.64	100.0%	101.0%
16	Poltava	226.35	415.74	263.70	uniform	2.76	warming	11.93	38.05	01.05.2009	656.04	97.1%	131.5%
17	Rivne	205.27	440.46	256.40	season	6.05	warming	10.98	35.14	4/20/2009	591.92	100.0%	112.0%
18	Sumy	244.45	361.70	217.61	2-rate	0,89/4,27	warming	10.22	37.3	01.12.2008	495.52	74.2%	114.2%
19	Ternopil	189.71	415.19	226.35	2-rate	4.84	HWS	12.59	37.49	25.03.2009	579.71	99.4%	116.4%
20	Kharkiv	227.39	459.19	265.12	2-rate	1,13/5,45	warming	12.01	36.03	01.12.2008	586.43	97.2%	106.4%
21	Kherson	184.52	405.25	285.78	season	6.45	warming	17.15	54.60	12/1/2008	601.40	100.0%	123.7%
22	Khmelnysky	178.00	373.10	165.10	2-rate	1,04/3,12	warming	8.28	25.37	01.01.2007	519.67	77.3%	116.1%
23	Cherkasy	160.95	218.25	220.24	2-rate	1,25/2,146	warming	9.87	31.09	24.02.2009	583.23	100.0%	222.7%
24	Chernivtsi	192.68	419.72	246.42	2-rate	1,21/4,67	no services			01.01.2009	542.64	100.0%	107.7%

#	Oblast center	Actual cost (without VAT), UAH/Gcal		Approved tariffs with VAT, UAH								Level of actual cost compensation with approved tariffs	
				for population							tariff for heat energy for commercial consumers, UAH/Gcal		
		Population	Commercial consumers	tariff for heat energy, UAH/Gcal	tariff for heating, UAH/sq.m		tariff for hot water supply, UAH			Date of tariff introduction			
type of tariff (season, 2-rate, uniform)	amount of tariff				type of tariff (warming water, hot water supply (HWS))	per 1 m3 of water	per 1 person a month						
25	Chernihiv	254.87	398.30	210.00	uniform	2.6	warming	9.49	34.16	01.10.2008	671.99	68.7%	140.6%
26	Kyiv	189.86	448.51	184.41	uniform	2.26	HWS	11.75	41.14	01.08.2009	395.70	80.9%	73.5%
27	Sevastopol	251.71	573.01	83.40	season	2.36	HWS	4.56	14.45	16.07.2006	639.29	27.6%	93.0%

* tariff without taking into account heat load