

“The ESCO model for Local Heating Solutions”

Bioenergy Seminar, Kiev, 21 September 2016

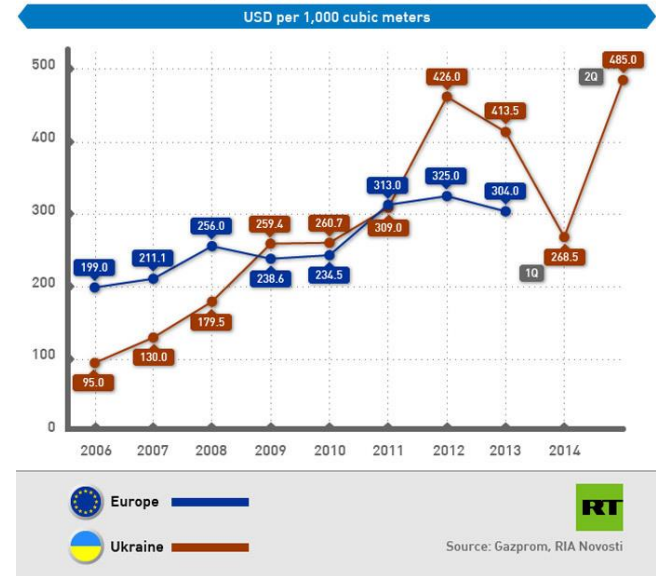
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Developments/Ukraine:

- Partnership Agreement with EU
- Financing by IMF and World Bank
- Large awareness of the urgency for energy saving
- Raising cost for heating (metering!)



Gazprom export prices for Europe and Ukraine



KIEV, August 20. Ukraine's newly-established energy crisis management centre is launching an awareness campaign to urge households to cut natural gas consumption in all possible ways and to switch to **alternative fuels** whenever possible. Deputy Prime Minister Vladimir Groisman was appointed to chair the centre.

In the regions of Poltava and Kharkiv (and other regions of Ukraine) there are several hundreds of small and independent energy consumers, such as schools, hospitals, kindergartens, communal centres, hotels etc, which generate their own energy. Almost all of them use fossil fuel, either natural gas or coal. The problems they face are threefold:

- cost of energy resources in Ukraine is increasing rapidly;*
- almost every power plant uses fossil fuel, has inefficient operation and causes local pollution and relatively high CO₂-emissions;*
- district heating networks are in unsatisfactory state and require capital repairs but lack the finance for modernization.*



Schools are not big but there are many schools in this area and they are close to each other which is good for logistics.

Besides, schools there are also hospitals, kindergartens and other communal establishments that are involved.



The schools currently use typical Soviet times coal boilers. These boilers have significant heat losses and have absolutely no control over temperature or regime.

It is required 24/7 constant cleaning and feeding of such boilers, therefore , typically, a school has four people to operate.

Modern boiler systems will significantly improve the operation



Coal storage bunker

Quality of coal is also doubtful as is the arrangement of its storage (photo). In fact, schools cannot control the *quality of coal*, nor can a school claim for *not supplied calories* due to low quality of coal. So, although calorific value of coal is somewhat higher than of a reed pellet, in reality they can be considered equal at such a level.



Wood chips



Sunflower husk pellets



Wood pellets



Briquette of pressed reed



Harvested chopped reed

Characteristics of an ESCO (1):

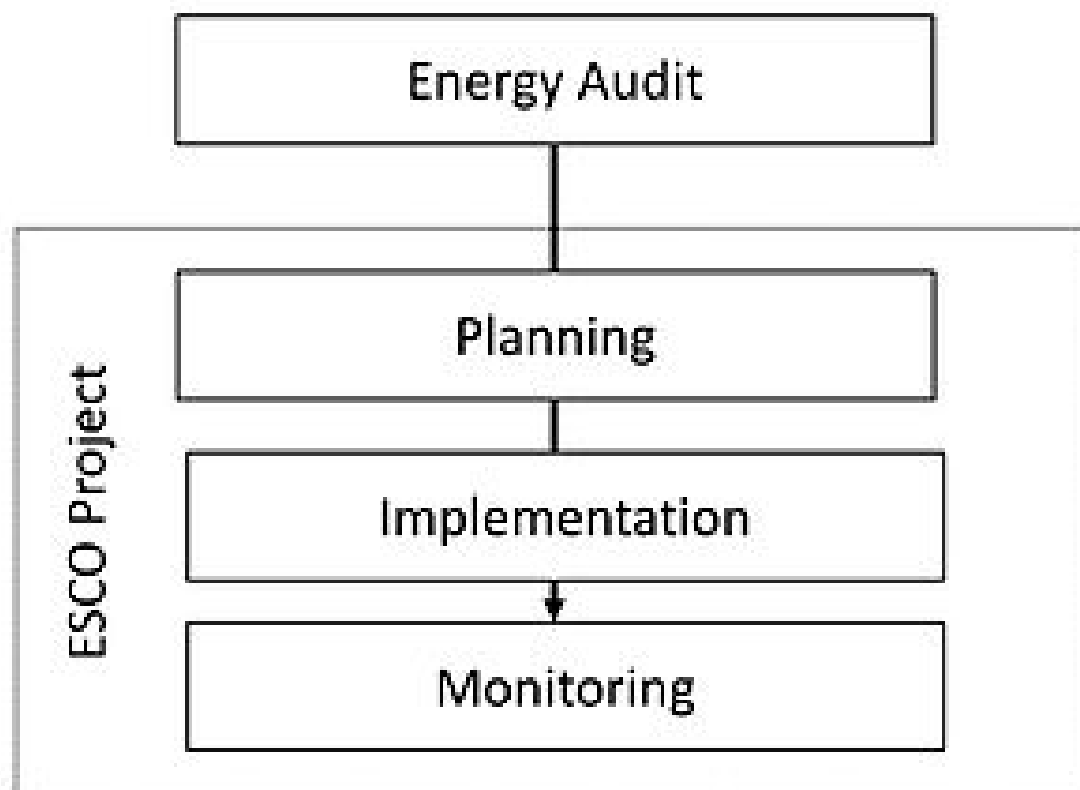
An energy service company or energy savings company (ESCO is a commercial or non-profit business providing a broad range of energy solutions including designs and implementation of projects, retrofitting, energy infrastructure outsourcing, power generation and energy supply, and risk management.

Characteristics of an ESCO (2):

A qualified ESCO can help you put the pieces together:

- (1) Identify and evaluate energy-saving opportunities;*
- (2) Develop engineering designs and specifications;*
- (3) Manage the project from design to installation to monitoring;*
- (4) Arrange for financing;*
- (5) Train the technical staff and provide maintenance;*

Set-up of ESCO:

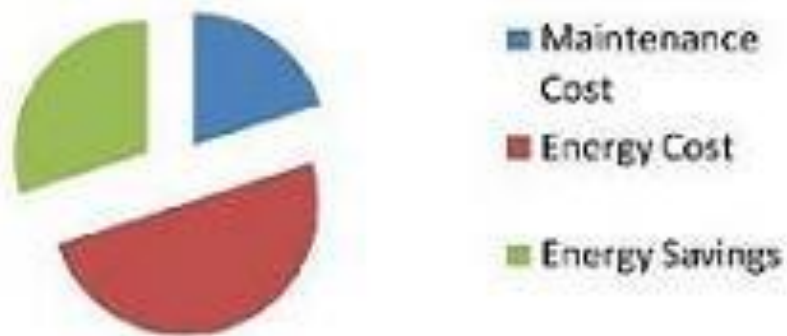


Economic benefits are the driver for ESCO:

Before Project



After Project



Example of economic calculation for ESCO:

Cash flow analysis of investment without grant											
	ESCO developer										
					Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Turnover:					-	150.000	150.000	150.000	150.000	150.000	150.000
- quantity product 1	Heat supply to local consumer				-	150.000	150.000	150.000	150.000	150.000	150.000
- price product 1					8,50	8,50	8,50	8,50	8,50	8,50	8,50
- Turnover product 1					-	150.000	150.000	150.000	150.000	150.000	150.000
- quantity product 2											
- price product 2											
- Turnover product 2					-	-	-	-	-	-	-
- quantity product 3											
- price product 3											
- Turnover product 3					-	-	-	-	-	-	-
Cost of the product or service:					30.000	75.450	78.223	81.144	84.222	69.966	73.386
- raw material costs						43.200	45.360	47.628	50.009	52.510	55.135
- labour costs (other than technical assistance)						2.000	2.200	2.420	2.662	2.928	3.221
- technical assistance					25.000	12.500	12.500	12.500	12.500		
- water and electricity costs						1.500	1.500	1.500	1.500	1.500	1.500
- other costs	Maintenance & spare parts					8.250	8.663	9.096	9.550	10.028	10.529
- other costs	Administrative & cash collection					3.000	3.000	3.000	3.000	3.000	3.000
- other costs	Travel, training, dissemination				5.000	5.000	5.000	5.000	5.000		
EBITDA (1 -/- 2)					30.000-	74.550	71.778	68.856	65.778	80.034	76.614

Our project foresees the installation of fully automated biomass boilers with loading bunker for continuous and lasting operation.

ESCO approach for financing, service & maintenance





PIB Biobased Energy Ukraine
leading Dutch technologies for integrated solutions



Typical set-up for independent heating system for hospital



PIB Biobased Energy Ukraine
leading Dutch technologies for integrated solutions



The project:

- *Replacement of coal by reed, harvested from the wetlands, and other biomass*
- *4 key elements:*
 - (i) implementation of a demonstration project;*
 - (ii) setting-up an educational centre for training of operational staff and technicians;*
 - (iii) development of approx.10 follow-up projects;*
 - (iv) setting-up a boiler service centre.*
- *Training programmes in Ukraine and in The Netherlands & Germany*

Target group benefits:

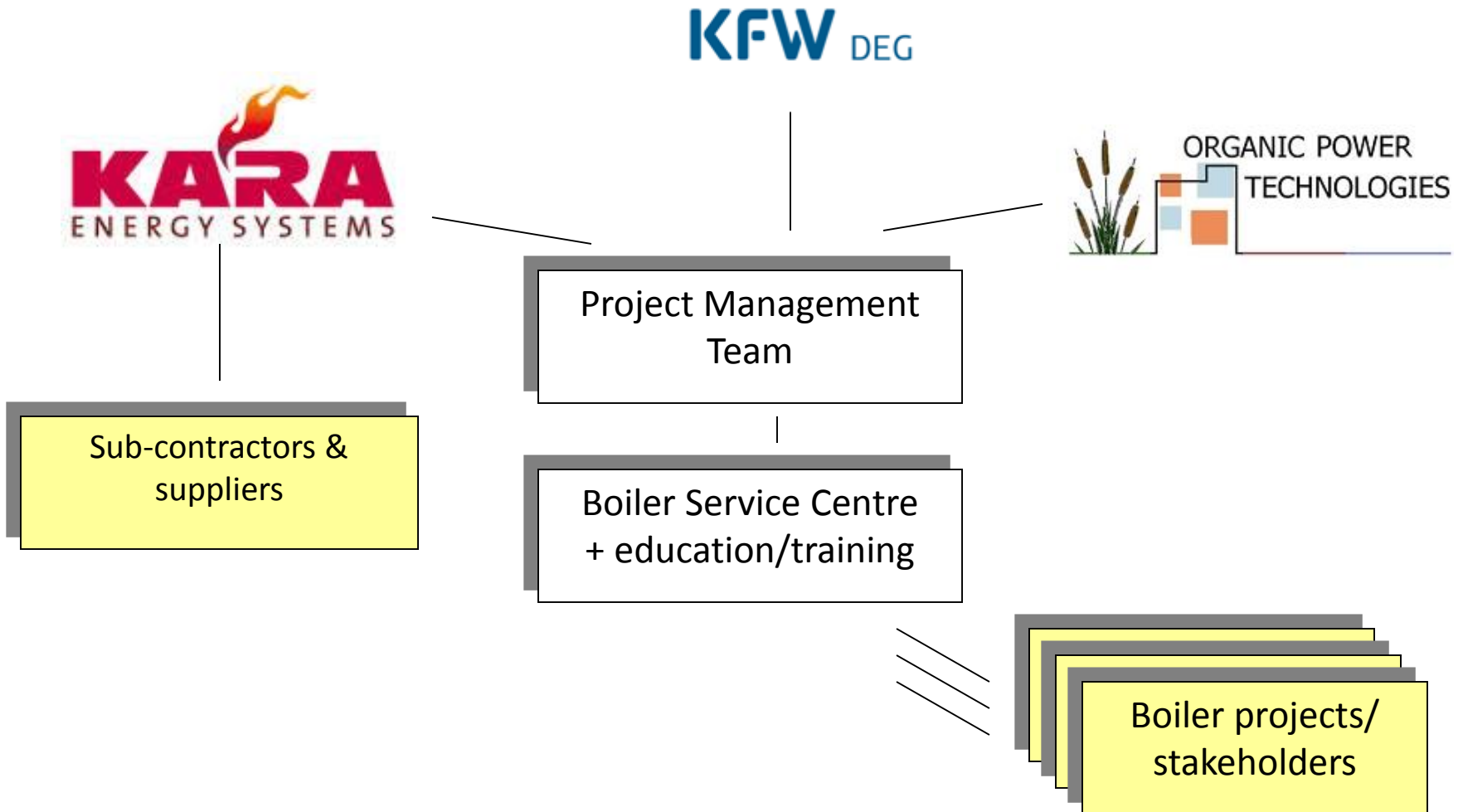
- *improvement of the environmental conditions and energy efficiency*
- *job creation and development of economic activity;*
- *economic savings resulting from the replacement of fossil fuel by biomass based fuel, particularly reed;*
- *stability of guaranteed heat supply during winter period (energy security);*

Participation by partners from Ukraine is possible for:

- *Independent entities in Ukraine (real estate, hospitals, schools, small industries, privatized heating companies etc.*
- *Heating capacity, typically, between 250 kW and 2 MW*
- *ESCO model for financing*
- *Stable consumer of heat*
- *Stable supply of biomass*

PLEASE EXPRESS YOUR INTEREST !!

The organisation for servicing many boiler projects in Ukraine:





Велике спасибі!

THANK YOU VERY MUCH !