

# I. Executive Summary

SUN Energy Balkan d.o.o. (SUN Energy) is an energy service company (ESCO) supplying households in collective housing with heating, cooling and hot domestic water from renewable energy. We are addressing more than 2/3 of daily household energy needs and providing comfortable living conditions at competitive prices from sustainable sources.

Project partner, Public Enterprise Gradsko Stambeno (Stambeno), is providing investment maintenance and services installations in collective housing buildings in city of Belgrade. The company is making sure that the elevators, water pumps and other common installations outside of private apartments, yet necessary for functioning of the building, are working correctly. Stambeno is also responsible for maintenance of facades and execution of other investment projects as required by homeowners' associations.

Through Public Private Partnership (PPP) these two companies will introduce heating and cooling services to old residential buildings in Belgrade which are currently not connected to district heating system of the city of Belgrade. By improving thermal properties of the buildings (insulation of facades and replacement of windows) it becomes possible for meeting energy needs from renewable energy sources, utilizing heat pumps. The PPP then acts as utility/energy suppliers to the households.

This way the company is providing an organized heating and cooling service to households, renovating their buildings (improving thermal properties) reducing CO2 emissions and contributing to cleaner and more sustainable environment.

The PPP will be successful because:

- It requires no investment from household to get involved, just commitment to regularly pay energy bills in coming 45 years
- Prices are matched with prices for heating services of the city's district heating company, yet providing savings on electricity bills
- Service is superior to district heating for the same price (24/7/365 service against just heating from 6AM to 10PM from 15<sup>th</sup> October to 15<sup>th</sup> April)
- Project increases value of real estate for the owner without investments
- It brings about organized, long term proposal for energy supply from renewable sources

To carry out the project, investment requirement is €36,319,500 of equity made available in phases from 2015 to 2019. This volume of investment would allow for investments in 860 buildings. Total number of buildings that can be targeted under the project is 5,185. First 860 buildings have 1,060,000 m2 of heated space which generate €12.7 million in revenues against €4.4 million in operational costs.

Investment in this project can be considered attractive because it features monopolistic qualities in providing an essential service to general population. It operates on stable and predictable cash flows, predictions for which outperform inflation rates. Trends which are further strengthening the case are population growth in Belgrade, increasing urbanization, chronic historical underinvestment in maintenance and number of engineering and thermodynamic deficiencies of current buildings.

## **II. Company Overview – Private partner**

### ***Company Profile***

SUN Energy Balkan d.o.o. was established in July 2013 in Belgrade by ZON Energie Internationaal Holding BV from the Netherlands (80% ownership) and two minority shareholders, Nenad Mitosevic and Cervus Sevinga, with 10% shares each. SUN Energy is an ESCO company, just like its parent company from the Netherlands, specialised in providing energy services to households and public sector. Apart from activities in the Netherlands and Serbia, company is present in Latvia and South Africa. Individual projects are carried out in Russia, Ukraine, Romania, Bulgaria, Channel Island and Malawi.

SUN Energy currently has five projects/buildings in Belgrade with total of 206 apartments to which company will be supplying energy. Four buildings are being constructed at the moment and one system for 48 apartments is currently operational. By the end of 2015, SUN Energy is expected to secure contract for at least 5 additional buildings and 184 apartments. Company has two employees and inherited lean philosophy and organizational structure with strong reliance on process automation. Effective project management and subcontracting of installation and physical works allows company to keep operational costs low.

We are used to being pioneers and first at many things! SUN Energy is the first ESCO company specialised for residential housing. It is also the first private company to structurally supply heating, cooling and hot domestic water from renewable sources in Serbia. We intend to be the first company to complete ESCO renovation project in Serbia and the first company to secure PPP for energy supply for residential market in Serbia.

### ***Company Vision/Mission Statement***

SUN Energy intends to be the leading renewable energy supplier to households in Serbia before expanding further on to other markets of the Western Balkans.

### ***Past Accomplishments***

- Created market alternative for state-run district heating energy supply for real estate developers in Serbia and signed up more than 200 apartments in first 18 months of operations in a declining development cycle.
- Introduced renewable energy sources as viable alternative to fossil powered district heating services.

- Together with a local bank developed a new banking product to address own industry challenges in a restrictive environment
- Successfully introduced renewable energy into public buildings in central Serbia on two showcase projects (kindergarten and day care centre for youth with special needs)

### **III. Company overview – Public partner**

#### ***Company profile***

Public partner is Public Enterprise Gradsko Stambeno, or PE “Stambeno”. The company is established by City of Belgrade in 1966 with mandate to maintain common parts, devices and installations of collective housing buildings in the city. Apart from maintenance as part of regular business process, company is able to carry out various other additional works at request and at the expense of homeowners’ associations. Legal framework for activities of “Stambeno” are laid out in Law on maintenance of buildings and apartments (Official Gazette of Republic of Serbia Nr. 44/95)

Company has 220 employees, from which 180 are full time employees. Almost a quarter of employees are university educated engineers or lawyers. Annual revenues of the company have been steadily growing in last five years to exceed €20 million in 2014 and company is constantly operating with a net profit. “Stambeno” is covering about 37% of the total number of residential units in the city of Belgrade (1.2 million citizens).

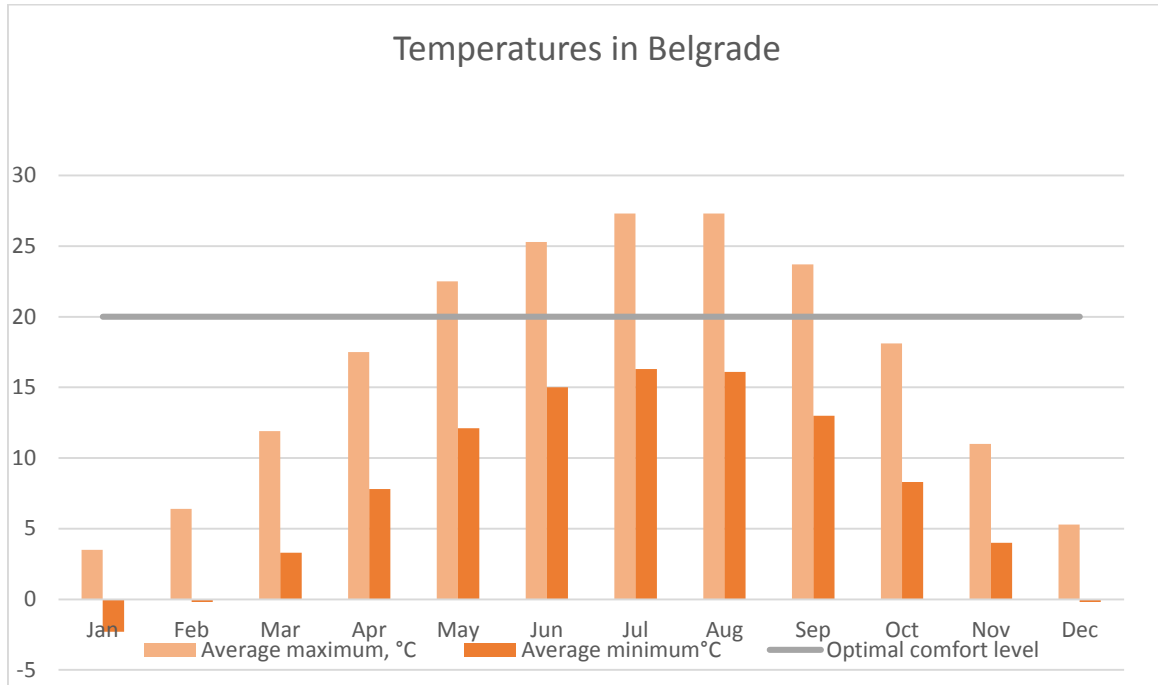
The company is very innovative and proactive, constantly trying to upgrade its services. Practical examples of such development are projects “Green roofs” – to increase amount of green spaces in heavily urbanized zones and façade retrofitting projects. The façade retrofitting project showed possibility to finance façade and reconstruction works from building up one more floor on existing buildings and selling those new apartments to cover for infrastructure works on the existing building.

As part of institutions set up by the city of Belgrade, it has full support of other city services, including centralised billing service called PE “Infostan”.

### **IV. Industry Analysis**

#### ***Market Need***

Through the project, SUN Energy will fulfil basic human needs related to heating in winter and cooling in the summer of collective housing buildings. Climate in Belgrade is moderate continental climate with average annual temperature of 11.7C. Figures generating such averages are shown on diagram below.



*Source: worldweather.org*

The gap between average temperatures, maximum and minimum values, and optimal comfort level are energy needs for heating and cooling of households in Belgrade, throughout the year. These averages are comprised of figures which include, for example, 9-10 days annually of temperatures below -10C as well as more than 30 days of temperatures above 30C. By addressing both heating and cooling needs of households, company is providing an important service to the clients in the city.

Apart from the needs to keep homes warm in winter and cold in summer, the buildings themselves must be fit for living. Average age of residential buildings in Serbia is about 30 years and about one third of all residential buildings are in need of urgent reconstruction. Subject to elements and over two decades of underinvestment, within next 15 years it can be expected that deterioration would harm structural properties of the buildings, making them unfit for living. In times when government spending is cut and disposable incomes of households leave no possibilities for investments in major maintenance projects – improvement of facades and windows against no costs for residents would address a major need of homeowners in city of Belgrade.

## Market Fundamentals

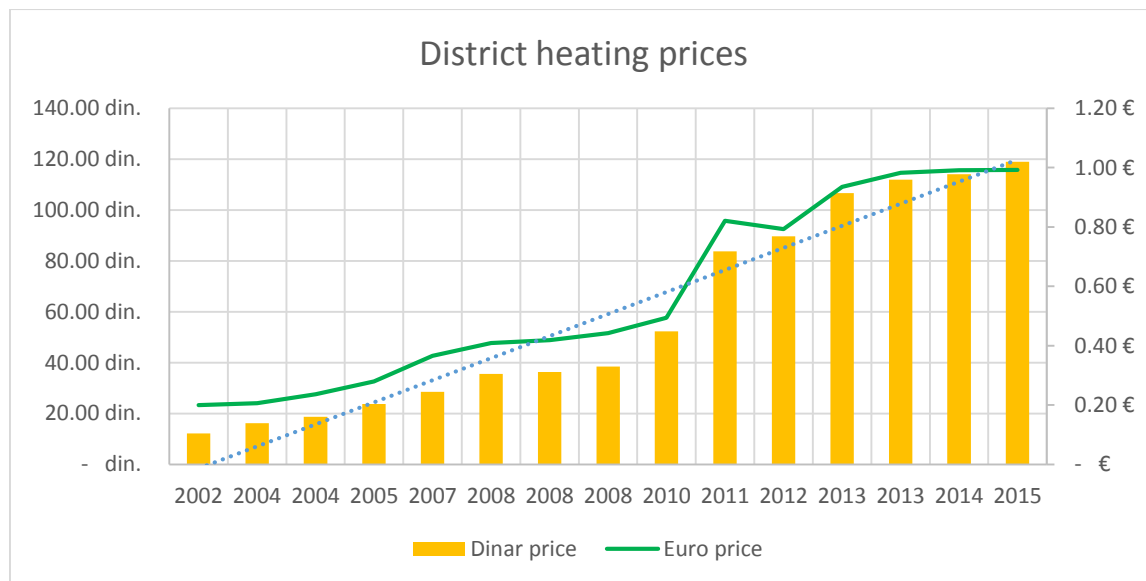
### Market/Industry Overview

SUN Energy is a fundamentally unique company on the market in Serbia. It is primarily competing on energy services market, as an ESCO company. Combination of energy supply and energy efficiency services that defines the activities of the company.

### Market/Industry Trends

Energy prices for consumers in Serbia are visibly lower and kept low as part of social welfare policy. Combination of factors, related to curbed government spending, advancing process of the EU integrations requiring abandoning of subsidies for public sector and general borrowing restrictions that the government has – gives strong reason to believe that energy prices in Serbia, in particular district heating prices will continue to rise. Figure showing this trend, also indexed in EUR against average exchange rates for the year. Note that in some years, there were more than one price hikes of district heating prices.

It is also important to note that price increases are often justified by increased operational costs and Belgrade district heating company is using natural gas as its main energy source. Interestingly enough, price increase has picked up since 2008 – a period when natural gas prices actually declined. This could serve to hint about gaps between actual costs of operation, with all the inefficiencies of the distribution system, and market pricing.

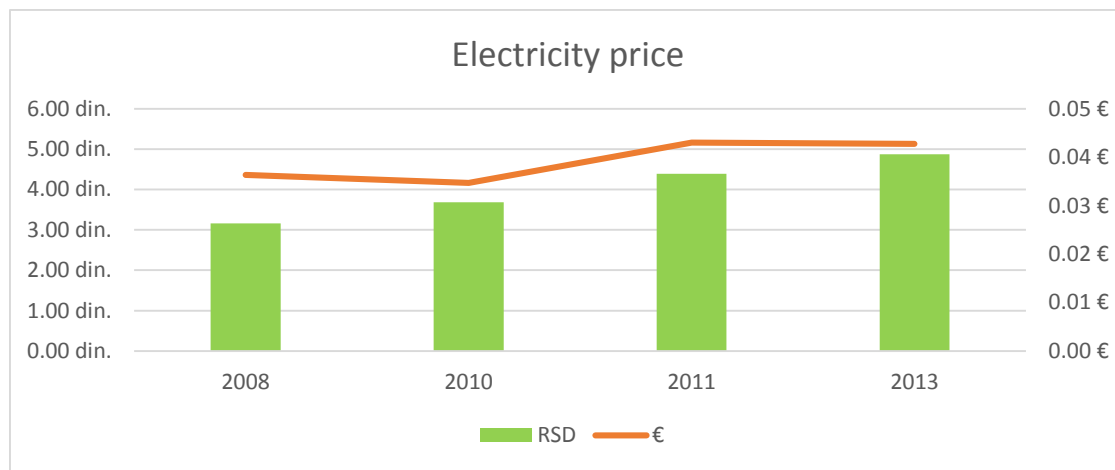


Sources: BeogradskeElektreane, NBS

District heating charges for its service all year round, independently of the fact if the energy is being supplied or not. Prices indicated in the figure above are for heating service from 6AM to 10PM from 15<sup>th</sup> October till 15<sup>th</sup> April. In case of extreme temperatures service is 24 hours per day (lower than -5 C) and in period from 1<sup>st</sup> October till 1<sup>st</sup> May. Guaranteed temperatures are 20C (+/-2C) for homes and 22C in bathrooms. Outside of prescribed terms, homeowners additionally apply other heating sources to have optimum comfort levels. In homes that have district heating, this is done by air-conditioning split system units which consume electricity. This makes actual heating bill higher than indicated prices. Same split system units are used to provide cooling in summer, again increasing energy bills of consumers. There are several other hidden costs that district heating company puts on the clients, such as electricity of circulation pumps in the basements of the buildings necessary to actually deliver heat to individual households. Customers that opted to pay on base of consumption, have additional metering costs of about €40 per apartment per year.

Another important trend is to switch to charging consumers per consumption. Buildings which are 30 years old with poor thermodynamic properties would become unbearable liabilities for homeowners when it comes to heating bills. Even with subsidised energy prices of, currently, about €0.059 per kWh of heating an average apartment owner of 60m2 in average 30 year old building would expect to pay about €570 only for consumption during heating season. On top of this, there would be installed capacity charges, billing and higher electricity bills for keeping home warm outside of operating hours of district heating company. Amount of €570 is very close to average net salary in Belgrade. Moreover, to switch to billing per consumption, clients are asked to invest themselves in measuring equipment which could cost between €150 and €350 per apartment for calorimeters. Considering all this it is understandable why government has been postponing decision to charging per consumption mandatory nationwide.

On the other hand, electricity prices, which are relevant for SUN Energy as operator, since heat pumps use electricity, has been rising at a much slower rates. There is strong pressure to increase electricity prices and it will certainly happen as a result of IMF pressure on Serbian government, yet the base prices are so low that these increases would not significantly affect profitability of the venture.



Source: Statistical office of Republic of Serbia, NBS

## **Relevant Market Size**

Belgrade is home to more than 1.2 million people in over 50,000 existing collective housing buildings. Technically, one way or another, this could be the market for energy services. Number of buildings which are without district heating system, yet part of portfolio of public partner of the PPP, are most direct market for our energy services. There are 5,185 such buildings or 62,000 apartments. However, it is estimated that immediate short term market is with 860 pre-selected buildings or some 22,000 apartments.

These pre-selected buildings are all larger than 1000 m<sup>2</sup> of net heated space or they have more than 25 apartments. This size and type of buildings offers best opportunities in terms of investment size and ease of completion of the project. These buildings are sometimes in the same street, making it easier to plan and execute individual projects.

## ***Unique Qualifications***

SUN Energy is the only energy service company on the market specializing in collective residential housing. We are the only company that is able to mitigate long terms risks of operation as utility in a capital intensive business model that works directly with end users.

Through existing experience from different markets, company is able to find the right balance between investments in energy efficiency measures and heating/cooling systems. As an independent company we are not tied to one particular OEM or solution provider, allowing us to properly judge where optimal balance of investments rests.

For every kWh our business consumes we deliver from 3.5kWh to 5.1kWh of billable energy. On passive cooling this can go even higher. This leaves sufficient margin to offer services at same prices as subsidised fossil fuel utilities and still make profits. Increasing prices energy will only improve performance of business in the long run.

Despite nominally same amounts for the energy, company does offer savings to clients which cost them **nothing** to implement.

## **V. Customer Analysis**

### ***Customer Needs***

Key needs of target customers is to have warm homes in the winter and pleasant temperatures in the summer. On top of this, the energy bill should be as low as possible. Any extras on top of these basic challenges can only strengthen client's opinions in our favour.

Based on current consumption patterns and consumer behaviour, it was determined that customers prefer temperatures in living rooms of 24C, compared with 20C which is currently offered by the district heating company. This temperature was measured during short survey in Q1-2015 during inspection of 36 apartments currently serviced by the company.

There are mixed demands concerning billing but it seems that clients would prefer to be billed by consumption. Lack of experience and understanding of own energy use led to belief that energy bills could be further reduced in case a switch is made to billing per use.

### ***Target Customer Profile***

Despite the fact that large number of buildings are already in portfolio of public partner, securing consent and support of homeowners is crucial for rapid success of the project. Homeowners associations, which are legally presenting a given buildings, are represented by presidents of homeowners' associations. These persons are liaison contacts with the rest of residents of a building. They are responsible for communicating important information about building to the residents, collecting money for joint activities, communicating with city authorities about problems that need to be addressed and so on. These functions are not paid and done voluntarily.

Presidents of homeowners' associations are often pensioners (with lot of free time) or most energetic and enthusiastic individuals in a building enjoying trust and respect of most of their neighbours. Convincing them, often, means convincing the other residents to follow up on an idea. However, just like any small community, residents have own with problems and challenges which will vary from building to building.

## **VI. Competitive Analysis**

### ***Direct Competitors***

SUN Energy, with its unique concept on the market has no direct competitors. There are few other ESCO companies on the market but they are focused on services to industry (like ESCO d.o.o.), public lighting (like Hesa Light for example) or otherwise connected to equipment producers (GGE, Slovenia). However, there are **no companies** actively competing to become energy suppliers to households through ESCO concept.

### ***Indirect Competitors***

Main indirect competitor, in energy supply area, is public enterprise "Beogradske Elektrane" or Belgrade District Heating Company (BE). Our main indirect competitor is the largest producer and distributor of heat in the region, even beyond Serbia. BE exist since 1965, currently employs 2,097 persons. Installed power of heat production units is 2,868MW and company operates over 1,420km of heat distribution pipelines throughout



the city. The company is supplying heat to 21.3 million square meters of residential and commercial space. Every year company produces about 3.500.700 MWh of heat. Its annual revenues in 2013 were about €266 million and net profits of €4.2 million.

Main strength of this competitor is the fact that it is a public enterprise and that city is covering any debts or losses that company may make in its operations. Its pricing policies are not necessarily market driven and it is an important factor in preserving social welfare. It is a major energy producer and heating prices are benchmarked against BE.

Just like any major company of that size, in utility segment, it is a rigid organization slow to change and adjust to market circumstances. It's management is political and goals of the organization are not commercial but social and political.

BE is burdened with inefficiency, outdated and underinvested infrastructure which is operating far from efficient. Since the company is supplying most energy to buildings which have poor thermal envelope, their energy production and distribution has to take into account all those losses – which can not be effectively billed.

On top of this, company is generally unpopular among population since it is providing poor service and does not allow unhappy clients to reject services. To connect to BE and its services, future clients are expected to pay connection costs which are often significant and not bearable to all households in Serbia.

In long run, company is dependent on use of fossil fuel, predominantly natural gas. Recent years have shown vulnerabilities regarding consistency of gas supply from Russia. The fact that some power plants have possibility to use dual energy sources (oil or gas) does not make their position any better in long run.

## ***Competitive Advantage***

SUN Energy is providing complete service to clients which is not only related to heating/cooling but also addresses issues such as thermal insulation of the building. Service wise, SUN Energy is providing both heating and cooling to its clients, 24/7 instead of just heating in period from 6AM to 10PM from mid-October to mid-April. Temperatures SUN Energy provides are not only higher but adjustable by clients, compared to temperatures delivered by the BE.

Main indirect competitor has no legal way to address the issues of thermal insulation of buildings owned by its clients, making this competitive advantage impossible to emulate.

Energy delivery network set up by the BE is unable to provide cooling and this kind of service cannot, under economically feasible circumstances, be provided to clients currently using radiators for heating.

Most importantly, in long run, SUN Energy is not dependent on fossil fuels and apart from sustainability offer a great deal of energy security.

## **VII. Marketing Plan**

### ***Products and Services***

Main product SUN Energy if offering is heating, cooling and hot domestic water – depending on availability and implementation feasibility. Apart from energy, the company is offering to solve a major problem related to façade and thermal insulation of the building.

The intent is to offer energy under a fixed energy offtake price for 15 years and then subsequently charge energy per household use. The prices would be permanently matched to those of BE – which is currently about €1 per m<sup>2</sup> with VAT. For this price SUN Energy intends to provide heating/cooling 24 hours per day all year round.

### ***Promotion Plan***

Company does not intend to engage in active or aggressive promotion. Cornerstone of promotion activities is to provide more of better service for nominally the same price which is charged for just heating. Improvements of thermal envelope of the building comes as additional investment which increase value of real estate of the client without any costs for the end user.

Goal of the promotional activities is to prepare ground for acquisition of similar PPP projects with other cities in Serbia. Promotional activities in that field are done through national or regional conferences to increase awareness of such possibilities.

## **VIII. Operations Plan**

### ***Key Operational Processes***

There are three main phases in the project:

- a. Project Development – current phase
- b. Reconstruction and acquisition
- c. Operation (and expansion)

## **Project development**

In project development phase, private partner is preparing the proposal to the city of Belgrade concerning the renovation and introduction of heating in the existing buildings. This process requires identification of priority buildings and sequencing of works to be carried out, preliminary budgeting of works necessary, rallying of all relevant stakeholders and completion of prefeasibility study which shows under which terms it makes sense for private partner to invest in such project.

In identification of priority buildings selection criteria is based on building size (over 1000 m<sup>2</sup> of net heated space) and number of apartments (25). The first cycle of buildings is 860 with 22,844 apartments spanning on 1.06 million m<sup>2</sup>. Investment required for this amount of buildings is estimated at €121 million from which €115.3 million are estimated as hardware costs and €5.7 million are estimated as costs of engineering and project management.

Once the prefeasibility study is complete, detailed development of PPP study is made. After the study is made, procedures are initiated for project implementation. Formal project proposal is made towards the city of Belgrade as founder of public partner on this project. Project proposal is also submitted to Commission for PPP of Republic of Serbia for formal opinion. Since the project proposal is made for period of up to 50 years, formal acceptance and approval is necessary on both levels – local and national to form a consent. Team involved in preparation of PPP proposal has been carefully selected and already has five projects approved on all levels currently in either tendering or pre-tendering phase as concessions which is more complicated than institutional PPP partnership which SUN Energy is proposing.

Once all approvals are granted, a procedure to select the private partner is made through a public tender. This tender is open to any eligible companies and in case that the contract is awarded to company other than initiator of the project, by Article 19 of Law on PPP, all costs made in preparation of the project initiative are refunded to initiating party.

## **Acquisition**

In process of reconstruction and acquisition, among initially selected 860 buildings priorities will be made based on following criteria:

- 1) Formal confirmation of acceptance of terms by homeowners' associations
  - a) Homeowners' associations that react first to announcement of project initiation
  - b) From database of public partner, buildings which have already submitted requests for works on their facades will be targeted first
  - c) From database of public partner, buildings which have longest term from last intervention on facades will be targeted second
- 2) Same type of buildings in same streets
  - a) Since most of the buildings are built after 1960, during planned economy their structure and typology is often repeated throughout the city or a street. Focusing on "same type" of buildings reduces engineering costs of the project due to copy-paste mechanism.

- b) Buildings in the same street offer better project-flow performances
- c) Future acquisition is made easier in a street that has one or two renovated buildings. This kind of activities could attract buildings and homeowners' associations which are not currently in portfolio of public partner
- 3) Structural simplicity
  - a) Buildings with simple facades, not too many terraces or ornaments are tackled in priority
  - b) Buildings in which a number of homeowners have changed windows into PVC frames should have priority since costs of reconstruction would be lower

## Reconstruction

Reconstruction and introduction of renewable energy systems is done in following order:

- 1) Legal, engineering and project design
  - a. Energy offtake agreements are signed with homeowners' associations
  - b. Engineers produce reconstruction plans based on construction physics (heat loss/gain calculations) which are determined by materials from which buildings are made.
  - c. Energy efficiency study then shows what measures need to be taken in order to reduce energy consumption to match average heating requirement of about 60-70kWh per m2 for heating.
  - d. Mechanical engineering project determines position heating distribution networks, position of technical rooms, equipment that should be installed and determines most suitable renewable energy source available at the location.
  - e. On buildings which will have energy needs supplied from geothermal energy source, geological projects are made to determine drilling positions for geothermal probes. If several buildings in one street are using geothermal energy, thermal response test (TRT) will be carried out to determine exact capacity of the soil on micro location.
  - f. Projection will be made that 80% of energy needs of the building are met from renewable sources and 20% will be covered from non-renewable source (most likely electric boiler). This is because over 90% of the operating time, 80% of capacity will be sufficient to meet energy needs. Remaining 10% of situations is projected to happen 10 to 15 days per year on average.
  - g. Individual apartments are inspected to determine position and lines for heating/cooling bodies in the apartments and solve condensate outflow where applicable.
  - h. All licenses and permits for works are obtained and granted with assistance of the city, as founder of the public partner
- 2) Execution of works
  - a. Project supervision, provided partially from public partner, is briefed in detail about works and given detailed instructions on activities
  - b. On location where geothermal probes will be installed, drilling beings. Depending on energy requirements depth and positioning of probes will be selected. Probes are being connected and led towards the position of technical room.
  - c. Scaffolding is mounted and reconstruction of façade and widows (where necessary) is done.
  - d. Parallel to works on the façade distribution networks and installation of equipment in apartments and technical room is made. System is made ready for future installation of calorimeters when it becomes

mandatory by law to bill only per consumption. Remote switch off valves are also installed in order to control energy delivery in case there is a non-paying customer.

- e. Control and monitoring systems are installed and system are switched on

### **Operation**

- 1) Energy is supplied to clients through central heating/cooling system
  - a. For internal purposes energy use is measured and monitored, in case it becomes more profitable to switch to per-use billing such transfer is announced
  - b. Throughout operation maintenance from OEMs is available
- 2) At the end of the month PPP company is billing the central billing company of the city of Belgrade called "Infostan". Funds are transferred to the account of PPP company.
  - a. Independently on collection rates of "Infostan" PPP is being paid.
  - b. It remains responsibility of "Infostan" to collect the payments or initiate legal procedures with non-paying customers. These billing services are done for a fee of (currently 8%) of billed amount.
- 3) Cost of operation and finance are covered from the streamed revenues

### ***Business Milestones***

- Project development
  - Successful project development phase ends with a public tender for selection of private partner for Public Private Partnership with "Stambeno".
  - Key aspects of the project proposal for "Stambeno" is to
    - Secure 45 year Public Private Partnership to ensure long term cash flow
    - Obtain a fixed price income guarantee for first 15 years of operation on level of €1 per m2
    - Transfer billing and collection activities to city's institution "Infostan" against a fee of 4% (normally 8%)
- Project execution
  - Efficient planning in selection of buildings and sequence of works to be done on locations
  - Selection of execution partners, installers and equipment providers should be done in the way to ensure quality an favourable payment terms. OEM credit lines should be secured as well (export credit finance from foreign equipment manufacturers)
  - Strict quality control will be implemented during reconstruction and equipment installation as it is key to successful operation
- Operational milestones / years 1-3
  - Year 1 – Acquisition and introduction into the system of at least 200 buildings in the project cycle. First bills sent in the same year when the reconstruction started for at least 100 buildings.
  - Year 2 – Acquisition and introduction into the system of 300 buildings and invoicing more than 400 buildings in second year of operations
  - Year 3 – All 860 of initially planned buildings are in the system and operational invoicing for all buildings operational.

- Long term operational milestones / years 3 – 15 + cycle
  - Completion of acquisitions in year 14, with 5,185 buildings in the system
  - Renovation of technical rooms and detailed inspection of the systems prior to re-investment cycle. Re-investment cycle is estimated at 15% of initial net investment value for replacement of outdated equipment or substitution with more modern equipment. This cycle is made every 15 years during validity of the contract
  - After 15<sup>th</sup> year, introduction of billing with measurement will probably be mandatory. Pricing structure is expected to be built from a fixed (installed power, paid throughout the year) component and kWh of consumed energy.
  - On year 15, assessment of re-investment needs is made and necessary equipment is replaced. It is estimated that some 15% of initially investment amount is necessary for this phase. It is possible that some heat pumps will need replacement (or their components). Probes, energy distribution networks and installations within individual apartments will not need any interventions. Heat pumps, circulation pumps, heat exchangers and some valves may need replacement depending on the inspection of equipment.