

Final Publishable Report

goEco
Development and Implementation of Integrated
Energy Concepts in Business Parks



Partners

Berliner Energieagentur (Coordinator)
ARENE Ile de France
Baltic Energy Agency
Energy Centre Bratislava
Ekodoma
Josef Stefan Institute Energy Efficiency Centre
SEVEN
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<http://go-eco.info/>



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1 The European Project goEco

Business parks offer various opportunities and synergies for a rational use of energy and an expansion of efficient energy generation technologies (RES, CHP). Especially SMEs in business parks are often facing similar problems to implement cross-sectional (core) technologies for an efficient and sustainable generation and use of energy. The main challenges to a more effective installation of such technologies in SMEs are a lack of available investment assets and sometimes know-how, shortage of capacities such as staff hours and financing and payback periods.

Cooperation between companies in business parks is a key to tap existing innovation potentials. Therefore the main target of goEco is to apply a co-operative approach to reduce energy consumption and CO₂-emissions in existing business parks, i.e. the participative development and implementation of Integrated Energy Concepts for business parks in eight partner countries. An Integrated Energy Concept is a strategy, which should be developed in a standardized approach between involved consortium partners, aiming for the following targets:

- Establishment of a network on national and European level,
- Analysis of energy supply and demand structure of a business park, identification of energy saving potentials and respective core technologies,
- Feasibility studies on concrete core technologies that should be implemented in a cooperative approach between several SMEs in a business park,
- Development of an Integrated Energy Concept for each business park as guidance for implementation of joint actions
- Implementation of the developed strategy in each business park by consultancy regarding financial, operator and procurement issues; consultancy in low-cost investments and in establishment of energy management.

1.1 Objectives and outcome

The project was to apply an integrated approach to reduce the greenhouse gas emissions in business parks. Integrated Energy Concepts supported the local companies regarding the identification of energy saving potentials and the implementation of activities to increase the energy efficiency. Under inclusion of respective companies and their special needs a focus was laid on consideration of corporate solutions. The main objectives are:

- Initialising and establishment of network in respective business park,
- Identification of energy saving potentials and concrete need of action,
- Increasing the rate of implementations of renewable energies and energy efficient technologies in business parks/SMEs
- Reduction of the lack of information regarding decision makers in SMEs

- Establishment of a comprehensive network of key actors within business parks to foster common implementation of Integrated Energy Concepts and to increase awareness of the opportunities to reduce energy consumption, energy costs and CO₂-emissions
- Development of action plans (e. g. use of RES-potentials, indoor/outdoor lightning, heating/cooling supply, electrical drives/engines, CHP etc.) with a focus on integrated solutions
- Decrease of greenhouse gas emissions in business parks by implementation of Integrated Energy Concepts.

By analysing the status quo the energy saving potentials and the concrete need of action has been evaluated. The Integrated Energy Concepts contain main topics to implement energy saving potentials. The development of these strategies has taken place in cooperation with the management of the business parks and/or local companies. One essential part of the Integrated Energy Concepts was the development of action plans and the execution of feasibility studies including economic feasibility of certain actions. This tool was the basis for investment decisions by business parks and companies. The most concrete output of goEco are various activities to increase energy efficiency and the generation of renewable energy and hence reduction of greenhouse gases in the participating business parks.

Outcome
<ul style="list-style-type: none"> ▪ 8 Fact Sheets on business park profiles (incl. building classification and energy demand and supply characteristics) and estimation of future energy demand profile of business parks and core technologies to be addressed in Integrated Energy Concept ▪ 8 CO₂ balance sheets of respective business park, respective core technologies ▪ Definition of 3 core technologies in each business park ▪ 2 Business park workshops (per partner): introduction and first results ▪ Excel tools for feasibility studies (one for each identified core technology) ▪ 8 SWOT reports on core technologies, summarising weaknesses and challenges for expansion of identified core technologies ▪ 10 feasibility studies covering 3 main technologies/appliances in each business park; altogether 80 feasibility studies
<ul style="list-style-type: none"> ▪ 8 Integrated Energy Concepts for business parks ▪ 1 business park workshop (per Partner): presentation of the concept/strategy
<ul style="list-style-type: none"> ▪ Implementation of one model project related to one core technology in each industrial business park with at least 3 cooperating companies (focus on EE, RES, CHP) ▪ Initiation of 2 further projects in another technology (per partner) ▪ 40 preliminary energy audits focussed on low-cost investments; ▪ 1 Business park workshop presentation of results (cp. review of the outcome) ▪ 3 Business Round Tables in each business park ▪ Reduction of CO₂-emissions by 500 t/a in each business park ▪ Stimulation of at least 500.000 € cumulative investment in each business park
<ul style="list-style-type: none"> ▪ Participation in 2 national events (for each partner) ▪ 4.000 leaflets

1.2 Project Partners

ARENE – Paris, France

ARENE Ile-de-France is the regional energy agency of the Paris region (Ile-de-France). ARENE Ile-de-France, set up in 1994, is a body working in partnership with the Regional Council. ARENE provides advice, technical support such as feasibility studies for innovative projects. The main fields of projects are: energy efficiency, sustainable buildings, renewable energy, smart cities, assistance to local AG21 and energy and climate local action plans and economic activities.



ARENE is also advising local authorities and enterprises on innovative fields like circular economy or smart cities. Within goEco, ARENE has triggered implementation on photovoltaic panels on some of the companies' roofs of the business park.

More on www.arenidf.org

BAPE – Gdansk, Poland



Bałtycka Agencja Poszanowania Energii S.A.
BAPE S.A.

The Bałtycka Agencja Poszanowania Energii Sp. z o.o. (BAPE) is a private energy consulting company. The Agency was founded in 1996 on the initiative of the Pomeranian Regional Authority to implement principles of sustainable development, to promote renewable energy sources and to improve energy efficiency. Agency cooperates with local and regional authorities, energy agencies, biofuel manufacturers, companies dealing with RES, thermal energy producers, energy consumers, etc. The company is a member of the nationwide Association "Energy and Environment Conservation" (SAPE-Poland).

Within goEco the BAPE advised several companies located in BP Kokoszki, arranged seminars and workshops and round tables on new technologies, renewables, purchase of electricity and financing specially tailored to service and production companies, and keeps supporting the process of implementing energy measures at BP Kokoszki.

More on www.bape.com.pl

Berliner Energieagentur – Berlin, Germany

The Berliner Energieagentur GmbH is a private Energy Service Company. The Agency was founded in 1992 on the initiative of the Berlin House of Representatives to open up energy saving potentials and to promote the use of renewable energies. Equal shareholders are the State of Berlin, Vattenfall Wärme AG, GASAG Berliner Gaswerke Aktiengesellschaft and KfW Bankengruppe.



Within goEco the Berliner Energieagentur advised the Berliner Großmarkt with the implementation of measures on energy efficiency and supports the process of implementing an energy management system at BGM in 2015 and beyond that.

More on www.berliner-e-agentur.de

Energy Centre Bratislava – Bratislava, Slovakia

Energy Centre Bratislava is a civic association established with the mission to promote and support rational use of energy in Slovakia and has been active in the Slovak energy sector since 1992. Since 1999 ECB has become an independent non-profit and non-governmental organization.



- ECB fulfils its mission through activities aimed at energy efficiency and utilization of renewable energy sources. These activities are divided into two principal areas:
- Public services focused on education, transfer of know-how and awareness raising;
- Advisory, consulting and technical assistance for public and private sector.

Within the goEco project Energy Centre Bratislava has advised the POĽANA IP with the implementation of measures on energy efficiency.

More on www.ecb2.sk

Ekodoma – Riga, Latvia

Ekodoma is an independent energy engineering consulting company founded in 1991. The aim of the company is to ensure energy efficiency and use of sustainable energy sources to achieve economic development with the lowest possible impact on the environment. This is accomplished by bringing sustainable climate and energy concepts in each stage and aspect of design and consultancy.



Within goEco Ekodoma advised the Port Magnat Business Park with the implementation of measures on energy efficiency, energy management and possible ways of further energy consumption reduction after the end of this project.

More on www.ekodoma.lv

**Jozef Stefan Institute – Ljubljana,
Slovenia**



The Energy Efficiency Centre (EEC) at the Jozef Stefan Institute (JSI) covers the fields of efficient energy use, long term planning in energy and activities for the reduction of greenhouse gases emissions and air pollutants. The Centre is a focal point for the collection and transfer of energy efficiency technologies to energy users, the state; energy, equipment and service providers and other interested agencies. At the same time it covers environmental effects of energy use and conversion. Intelligent energy management systems, smart metering and development of advanced energy services (DSM, DR) is one of the key EEC research and application area. Important part of EEC activities is cooperation with state institutions at the field of efficient energy use, energy planning, environment taxes (CO₂ tax), emission trading; nevertheless it still remains strongly connected, by its consulting (energy audits, feasibility studies, etc.) and training role in energy, with industrial companies, public sector, services and other institutions.

Within the goEco project, EEC was the main expert for developing two crucial tools for implementation of more sustainable principles of energy management within BTC City Ljubljana through the project trajectory and beyond.

More on www.ijs.si

SEVEn – Prague, Czech Republic



SEVEn is an energy efficiency advisory organization with 25 years of experience in energy sector. Its mission is to promote the cost-effective and efficient use of energy as a means to protect the environment and support economic development. Its working experience includes a large number of projects comprising energy master plans of big cities and regions, feasibility studies of various energy saving and renewable energy projects for public and private investors. Within goEco project SEVEn advised the Sklady Hodonín business park in the entire process of identification, design and implementation of energy savings including the assistance in managing the application for investment subsidy.

More on www.svn.cz

Skane Energy Agency – Lund, Sweden



SKÅNE ENERGY AGENCY

Skåne Energy Agency is a regional energy agency founded with support from the European SAVE program in 1998. It is a department within The Association of Local Authorities in Skåne, a member organization of the municipalities in the region, which is a non-profit organization. The steering group consists of five local politicians from the region and 3-4 energy experts. The office is situated in Lund. Within goEco project Skåne Energy Agency advised the IPOS business park on specific energy related issues to further develop the planning for measures, energy and CO₂ reduction.

More on www.kfsk.se/energikontoretskane

2 Integrated Energy Concepts for Business Parks

The following chapters focus on the implementation activities in the business parks which were part of the goEco project: partners report what they were able to achieve during project duration.

2.1 Melun Val de Seine Business Park – Vaux-le-Pénil (ARENE)

The business park of Vaux le Pénil is the second biggest business park of the “Seine et Marne” department. It is located 50 km from Paris, in the Melun Val de Seine urban community (CAMVS) which includes 18 business parks.

The overall primary energy consumption is more than 110.000 MWh per year (electricity and gas). 70 % of primary energy is used for industrial process and for heating buildings. Other fact, there isn't power generation (renewable or not) directly on the business park. More than 50 companies located in the area of the Business Park have been contacted in the framework of the project and 8 companies have accepted to realise a preliminary energy audit and several technical feasibility studies.

▶ 120 hectares
▶ 250 companies
▶ 7.000 employees
▶ 60% of SMEs
▶ Activities
30% industry
30% of services
– 20% trading
▶ 6 new acres being marketed

Key figures for the business park of Vaux Le Pénil

A second step was to create an integrated energy concept based on the analysis of overall primary energy consumption and the potential of energy saving and the potential of renewable energy production on the business park. Implementation of measures of the integrated energy concept aimed at improving energy efficiency and reducing CO2 emissions will take place in two ways and independently of each other:

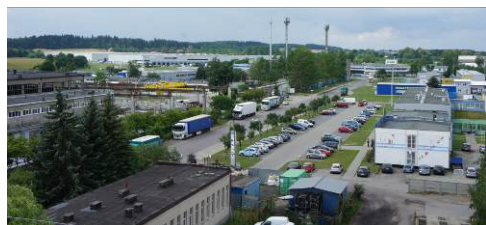
Feasibility Studies on	Replacement of existing lightings; Improving the energy efficiency of the building (insulation of wall and change of windows); Generation of electricity from photovoltaic structures; Implementation of heat recovery technology (coupled heat exchangers and cross-flow recuperator); Implementation of Energy management assessment
Measures to be implemented	Generation of electricity from photovoltaic structures Improving the energy efficiency of the building and lighting systems change (feasibility studies achieved in 2015)
Potential CO₂ reduction	250 to per year
Year of implementation	2015 - 2016
Lessons Learned	The need to develop new economic tools to facilitate the development of energetic projects mostly for the photovoltaic production (produce and auto-consume electricity). The unawareness for economic tools for the energetic projects.

- Renewable energy production
- Energy efficiency

For the implementation of renewable energy production, ARENE studied with several partners the possibility to produce and auto-consume electricity produced by photovoltaic panels directly installed on the roof of the company. Other study is to install “building blocks” of a smart grid on the business park to help to reduce consumption drawn to the distribution network, to support the network when needed. The second part is the implementation of energy efficiency actions (energy management system, insulation and lighting system change). ARENE works with the companies of the business park to prepare the actions during the period 2015 - 2020 and define the objectives. Several events have been organised during the year 2015 in order to find financial solutions, e. g. white certificate and evaluate the feasibility of actions plan.

2.2 Kokoszki BP – Gdansk, Poland (BAPE)

The Kokoszki business park is neither a restricted area nor does it have a single owner or administrator. Only some of the businesses located in this area own the buildings in which they are



seated. In the pre-transition era there were many construction and assembly companies based in this area, which later ceased to exist but the owners of buildings or land let the premises to interested entrepreneurs. At present there are many businesses located here, such as construction industry companies, construction and installation services companies, mechanical plants, paint

manufacturers, logistics and transportation companies, sales offices and one local utilities company.

The key infrastructural connection of stakeholders in Kokoszki business park is local district heating network. The network is supplied from a coal boiler plant. The District heating company plays also multi-media role offering supply of water and IT services.

The coal boiler house has been retrofitted to match stricter emission standards. The district heating network has been modernized and transferred from traditional pipes in channels with deteriorating insulation and high energy losses to preinsulated networks. Heating substations are retrofitted and district heat market is increasing. Possible switch from coal to other fuels and introducing cogeneration has been analysed but this requires stable energy and environmental policy as well as incentives supporting high capital investments.

Main activities of Kokoszki business park stakeholders have been concentrated on energy efficiency, including reduction of their demand for heating as well as use of electricity for lighting and technology.

Installation of PV systems is considered by some businesses when the new Renewable Energy Law sets feed-in tariff system for micro-installations. Small 20 kW wind turbine installed within FP7 SWIP project shall serve as demonstration of possible utilization of efficient and feasible wind energy generation.

Feasibility Studies on	Internal lighting in the office building, internal and external lighting in the production plant; HOB retrofit (shift from LPG to DH); retrofit of the building envelope office building; retrofit of the building envelope – plant building; modernization of the compressed air system at the production plant; Heat recovery for DHW preparation at the office building; modernization of DH plant (shift from coal to other more environmentally friendly energy sources including biomass); PV installation; production of electricity from small wind turbines
Measures implemented or to be implemented	Retrofit of transmission pipes of the local DH network of 860m, modernization of heat exchangers (implementation of metering and monitoring system for all heat used by the Airport), modernization of heat exchanger in the office building, thermorenovation of small administrative building, modernization of 8 substations in DH network (conversion to heat exchanger substations with automatic control), modernisation of internal lighting in office building and administrative building of a production plant, implementation of RES like PV or SWTs (if only feasible), modernisation of heat source and installation of CHP.
Potential CO₂ reduction	543 to per year
Year of implementation	2013-2015 and beyond
Lessons Learned	<p>There is large potential for improving energy efficiency in production and service facilities covering both energy production technology and the use of heat and electricity for heating, domestic hot water, and lighting technology.</p> <p>Most of the projects will be feasible when special financing is available – grant or preferential loan. Also as to RES implementation – present system of support of small RES does not allow for efficient generation from micro-sources.</p> <p>Implementation of the measures depends on the individual decision of each company. Willingness to undertake energy efficiency measures by companies depends on the structure of prices and energy markets and available incentives from different sources.</p>

2.3 Berliner Großmarkt – Berlin, Germany (BEA)



The Berliner Großmarkt (BGM), covering an area of app. 330.000 square metres, is an important center of trade. Top-quality fruits, vegetables, meat, fish and convenience products of all types are vended at BGM. More than 300 resident retailers, who gain app. 1 billion per year, make the “Belly of Berlin” one of the most important warehouses in Germany.

As an integral part of an integrated energy concept, several feasibility studies (e. g. lighting in parking decks, use of biomass, renewal of chiller unit at the meat market) focused on potential savings that can be achieved via an implementation of the respective measures on energy efficiency. As first step in the phase of implementation the introduction of an energy management system at Berliner Großmarkt will be carried out. The implementation process will be carried out starting 2015 with the BGM acting successively as energy manager for its tenants.

Together with the Berliner Energieagentur, BGM has started the implementation of an energy management following the international standard ISO 50001. To gain fully transparency regarding energy consumption on the grounds, BGM is starting to exchange more than 700 energy meters for power, heat and water to smart meters.

As second step the renovation of the car park, esp. the exchange of lighting systems, has been implemented. More than 250 conventional light bulbs have been changed to LED resulting in a yearly reduction of energy costs of about 6.000 €. The renovation of other lighting systems will be successively in the focus until 2020 with a planned renovation rate of 20 % p.a. The renewal of the chiller unit at the meat market is planned for 2016. Furthermore, BGM is engaged in the installation of the first inner city wind turbine with the public administration.

Feasibility Studies on	Lighting in Parking Decks; Usage of generated electricity from photo-voltaics; Improving the energy efficiency of the building shell at the fruit and the meat market; Use of Biomass; Renewal of chiller unit at the meat market; Implementation of an Energy Management System.
Measures implemented or to be implemented	Retrofitting of lighting systems in parking decks – Installation of LED Implementation of an Energy Management System
Potential CO₂ reduction	639 to per year
Year of implementation	2015 and following
Lessons Learned	The existence of a central management at Berliner Großmarkt was a major advantage and a key factor for the implementation of energy efficiency measures at the business park. One contact person facilitates the process of collecting data on energy consumption and presenting outcomes of the energy concepts to the main tenants at the business park.

2.4 Poľana Industrial Park – Lucenec town, Slovakia (ECB)

The POĽANA Industrial Park (IP) is located in the northeast of Lučenec town. The whole area of POĽANA IP is a former textile plant currently appointed as a brown field industrial area. Companies currently operating in POĽANA IP are from the field of textile manufacturing, textile wholesale, mechanical engineering, soft furniture parts manufacturing, wood production, production of cardboard boxes and various other small businesses, warehouses and services. Approximately 300 employees work in the POĽANA IP in various SMEs.



During the goEco project, Energy Centre Bratislava (ECB) has mainly focused on reducing energy

Feasibility Studies on	Improvement of thermal properties of buildings structures; Utilization of electricity generated from photovoltaic; Insulation of steam and condensing pipes; Rationalization of natural gas consumption by installation of a condensing boiler; Implementation of an Energy Management System.
Measures implemented or to be implemented	First company: reconstruction of indoor lighting and implementation of an Energy Management System. Second company: insulation of steam and condensing pipes and comprehensive reconstruction of thermal building envelope.
Potential CO₂ reduction	105 t per year
Year of implementation	2015
Lessons Learned	<p>The important factors that triggered the implementation of the goEco project were huge involvement of the former owner of the whole area of Poľana IP and support from the local municipality.</p> <p>The additional implementation of other selected measures is particularly limited by business strategy of involved companies. Companies are mainly open only to investments which have 3 years cash back period (unpredictable situation on the market). Due to this important fact the successful implementation of additional investments will require two fundamental changes in the business environment:</p> <ol style="list-style-type: none"> Simplification of overall approach to receive financial grants for micro, small and medium enterprises. Comprehensive amendments in the regulatory framework regarding supports of renewable energy sources.

consumption and CO₂ emissions in POĽANA IP. To reach this goal, ECB elaborated 7 preliminary energy audits, which identified altogether 41 energy efficiency measures, and 12 feasibility studies focused on potential savings in altogether 7 companies from POĽANA IP. Conclusions from all elaborated documents are summarized in The Integrated Energy Concept (IEC).

The IEC is divided into two periods. The first period lasts until the end of 2015 and investments into four energy efficiency measures will be implemented. The investments will be realized in two companies and the estimated energy savings are around 431 MWh / year (105 t CO₂).

The first energy efficiency measure included replacement of indoor lighting with LED technology (112 light sources). The insulation of steam and condensation pipes (changing and optimizing of pipelines) will be the second implemented measure. The third energy efficiency measure will be the installation of remote data transfer and continuous energy consumption monitoring system, which serve as core parts for Energy Management System. The fourth energy efficiency measure will cover comprehensive reconstruction of thermal envelope of one building and is related to successful receiving of EU Structural Funds.

The Integrated Energy Concept involves additional investments to nine core technologies in 7 companies from POĽANA IP for the next period from 2016 to

2020. The additional implementation of other selected measures brings estimated energy savings of around 631 MWh / year (151 t CO₂).

2.5 Port Magnat Business Park – Riga, Latvia (Ekodoma)

Port Magnat Business Park (BP) is situated on the banks of river Daugava, which runs through Riga capital of Latvia). The area of Port Magnat covers around 9 ha. Railroad connection, port, which is connected to Baltic Sea and land routes makes this area very interesting as a logistics point.

Feasibility Studies on	Building envelope, Lighting systems, Ventilation and cooling systems, District heating
Measures implemented or to be implemented	Comprehensive renovation of an office building in the territory of the Business Park Introduction and maintenance of Energy management system
Potential CO₂ reduction	~ 250 tonnes per year
Year of implementation	Comprehensive renovation of office building is planned in 2017-2020
Lessons Learned	Business Parks are willing to invest in measures that have payback times no longer than 3 years. Energy efficiency can be used as a marketing trick to attract new companies to Business Parks.

Many companies are using this site as a logistics point for storing and shipping different materials. In the territory of Port Magnat mostly timber, wood logs, gravel and other materials are stored. Also manufacturing of different products is being done in the Business Park. Thanks to the good location there are three office buildings situated in the territory of the BP. In these office buildings different businesses are situated. Energy in the BP is mostly consumed for space heating purposes, while electricity is being consumed for industrial processes and for office building needs.

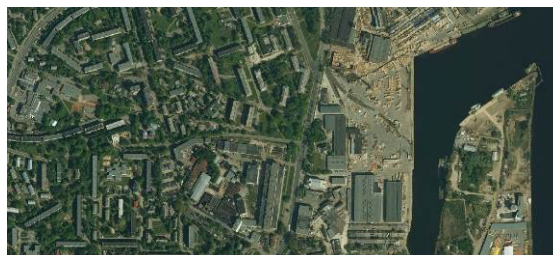
During the goEco project feasibility studies for different energy efficiency measures were performed. During these feasibility studies the main attention was paid on measures that can be implemented in office buildings situated in the territory of the Business Park.

Main energy savings can be reached by comprehensive building renovation. Also lighting system improvements should be implemented because the payback period of these measures is quite short. The findings of the feasibility studies were presented for Business Park representatives during numerous meetings.

A seminar on joint and green procurement was held for Business Parks and other interested parties. Following the recent EU energy policy activities a seminar on energy audits in industrial parks and in large companies was conducted.

Many of the industrial and storage buildings in the Business Park had been renovated prior to the project. During the project, attention to these buildings was paid because it was important to see whether the buildings will achieve real energy savings. Energy management was an important part of achieving the savings estimated in energy audits of these buildings. During the project it was proven that energy metering is a very important part of energy saving (it is hard to save energy if you do not know what you are consuming).

After the end of the project further work in the Business Park will be carried out in order to decrease energy consumption. One of the office buildings will be renovated when cofunding for building renovation becomes available (the payback time of this project is too long without cofunding).



2.6 Business Park BTC – Ljubljana, Slovenia (JSI)



Feasibility Studies on

Within the project 10 feasibility studies have been made. First four feasibility studies are focused on lighting, next three studies are focused to HVAC systems and the last three studies are focused at implementation of energy management as the main core technologies.

Measures implemented or to be implemented

Retrofitting of lighting systems at the Merkur Center (hardware and domestic appliances store).
Implementation of new HVAC system at the Hall A.

Potential CO₂ reduction

571 t per year

Year of implementation

2014/2015

BTC City (BTC), located in the urban catchment of Ljubljana, is one of Europe's largest shopping, entertainment, business, and commercial centres. It has a total gross area of more than 450.000 square metres and is managing a range of business, commercial, recreational, entertainment and cultural activities with diverse logistics services.

The Company is aware of the great importance of environmental management and special emphasis is devoted to waste management, waste water and air, effective and rational use of energy. Though there are variations by year (and seasonal weather), annual electricity consumption within BTC is roughly 28.000 MWh with an additional 7.400 MWh for heating.

In the first stage more than 10 preliminary energy audits were performed as a basis for feasibility studies and further development towards integrated energy concept for the business park. Feasibility studies were mainly focused on lighting, HVAC systems and to energy management as the main core technologies. First implementation activities were performed at the Merkur shopping center (hardware & domestic appliances store) with replacement of the new internal and external lighting system reaching significant energy & CO₂ savings (285 MWh / a, 157 t CO₂).

Second implementation measure was complete with a re-placement of HVAC system at the Hall A and it was performed during go Eco project meeting in Ljubljana in October 2014. Future activities are planned within the scope of heating system renovation at the Atlantis Water Park, using the waste heat from nearby company.

Lessons Learned

Small and Medium-sized Enterprises (SMEs) offer various opportunities and synergies for cooperation in the field of energy efficiency and green growth development. However, many SMEs often do not have sufficient financial or human resources, by which they could take a more active role in that process and additional interventions are needed. The most frequent mistake in dealing with SMEs and energy efficiency is related with the copy-paste approach where peculiarities of each particular SME are ignored and proposed solutions are blind copies of general strategies and solutions. The first step in any strategy development is the evaluation of barriers which were the initial trigger for the strategy development. SMEs are often facing similar problems to implement cross-sectional (core) technologies for an efficient and sustainable generation and use of energy. Cooperation between respective SMEs is a key to bridge the gap between existing innovation potentials and enable sustainable transformation.

The most obvious result of cooperation of different SMEs in the field of energy efficiency is continuous improvement of energy use, which on the other side has a positive effect on competitiveness and economic successfulness of SMEs.

2.7 Sklady Hodonín Business Park – Hodonin, Czech Republic (SEVen)



Business park “Sklady Hodonín” (Hodonín storage park) has a long history dating back to a medieval castle. In 1787 it was rebuilt to a tobacco factory and manufacturing of tobacco products stayed there for over 2 centuries until the last owner – Philip Morris concern moved out in 2006. The business park is now owned by a private company created for the purpose of operating and managing the facility.

The business park comprises about 30 buildings of different sizes and types in an area of 6 hectares which offer a total floor

area of 60,000 m² for manufacturing, storage and administration purposes. Currently there are over 20 different firms and institutions using the park as tenants. Among the users of office buildings are important governmental institutions, companies active in various manufacturing activities (shading elements for windows, small brewery, plastic parts), and services (call centre, waste management, cantina).

The main challenge was a rehabilitation of energy systems. The old heavy fuel oil fired boiler plant was in bad shape and the heat distribution obsolete using steam. Electricity was partly purchased from grid, partly produced by photovoltaic panels on the buildings’ roofs, and supplied to tenants in a local distribution system. Several modernization options were designed and analysed, ranging from partial renovation of existing equipment (conversion of boilers from steam to hot water operation) to the installation of a new heat source using natural gas or biomass, and with and without cogeneration. The most suitable option proved to be a gas fired CHP unit and new gas boilers for peaking and back-up.

This solution has been designed and implemented in late 2014. The heat source is now a 0.5 MWe CHP unit with four new gas boilers (0.3 MWt each). A hot water heat distribution system has been installed with substations in each building. While the CHP unit will be operated based on heat demand mainly in the winter period, its electricity production will conveniently complement the production at the PV plant, which occurs mainly in the summer.

Feasibility Studies on	Various options of heat source modernization (natural gas or biomass fired, with or without cogeneration) Insulation of selected buildings Lighting upgrade (indoor and outdoor lights)
Measures Implemented	Natural gas fired CHP unit serving for base load and gas boilers for peaking and back up, new hot water distribution system
Potential CO₂ reduction	800 to 1400 t per year, depending on the intensity of park development
Year of Implementation	2014/2015
Lessons Learned	Keeping the centralized heat supply system for space heating is a precondition for the implementation of a highly efficient combined heat and power source. A well prepared project with significant positive environmental impacts has a good chance to receive an investment subsidy which reduces the installation costs and in consequence the heat and electricity price for the end-users.

2.8 Industry Park of Sweden – Helsingborg, Sweden (SEA)

IPOS is a business park situated in the city of Helsingborg in the Öresund region in the south of Sweden. It consists of about 20 chemical- and service companies, the biggest one being Kemira Kemi which also is the owner of the business park. It is also an outstanding logistic center with harbour, railway and truck facilities.

Due to the energy intense process industries at the site the total energy turnover is considerable, 1,000 GWh / year, of which approx. 600 GWh / year is recovered climate neutral energy. Recovered energy is used for production of green electricity, steam / hot water, compressed air, cooling water, etc. Approx. 350 GWh / year of the recovered energy is supplied as district heating to the city of Helsingborg, corresponding to 1 / 3 of the total district heating demand. “Industrial Symbiosis” is a key word for the management both from a business point of view as well as an energy strategy.

The size and complexity of the energy system became an interesting challenge to the project. Following the feasibility studies the conclusion was also that energy awareness and education is a crucial part of continued improvement. Main issues following the investigations were



Feasibility Studies on	Electrical motors efficiency, upgrading to IE1 class of motors and the problem of over-dimensioning of motors with the possibility of using motors with lower effect. Improvement of lighting by using LED-equipment or other type of new lighting systems with lower effect. Leakage on high pressure steam and compressed air systems.
Measures implemented or to be implemented	Upgrading of electrical motors, installation of new lighting equipment (general), routines for check of steam and compressed air
Potential CO₂ reduction	<p>From 1 sept 2015, a new electricity agreement means that more than 40% of the electricity used within the business park is climate neutral. Together with considerable usage of climate neutral recovered heat energy, it is difficult to measure performance by reduction of CO₂-emissions at IPOS.</p> <p>The exchange of lightning systems will reduce electricity consumption by 300 MWh/year.</p> <p>Repair of leakages on the pressurised air system will reduce electricity consumption by 70 MWh/year.</p> <p>Repair of broken steam traps will increase process efficiency and reduce steam consumption.</p> <p>Exchange of electrical motors will reduce electricity consumption by 2-5%.</p> <p>Increased energy awareness as a result of several educational measures throughout the project.</p>
Year of implementation	2015 - 2016
Lessons Learned	Go Eco has contributed to put focus on specific energy related issues to further develop the planning for measures, energy and CO ₂ reduction.

- Electrical motors: With more than 4 000 electrical motors at the site especially the cost / benefit calculation for large motors (> 75 kW) by using IE1 class engines instead of IE2 or IE3 motors was surveyed.

- Lighting: Exchange of lighting systems, indoor as well as outdoor, by using LED and more efficient lighting equipment has been further investigated
- Leakages in steam and compressed air systems: The distribution of high pressure steam and compressed air is vast. Leakage up to 10 - 20 % is normal causing the need of oversized compressors and extended cooling capacity. The survey showed low leakage both on steam

and compressed air but continuous service and maintenance recommended to keep it low. Go Eco arranged a 3 hour theoretical and practical education on steam systems with in total 30 participants.

- Heat recovery: Study trip to Alfa Laval to learn more about heat recovery systems and the effects of maintenance of heat exchangers on energy performance.

3 Quotes from the Business Parks of goEco

In the following section, people are being given the floor. In short interviews with their national partner they have stated, why goEco was important, what was missing and what they want to achieve after the end of the project.

3.1 Interview with Florence Duclos, Communauté d'Agglomération de Melun Val de Seine

Why did you participate in the goEco project?

With over 120 hectares and nearly 300 businesses, Vaux Business Park Pénil is an important economic area for the territory. The urban community bears particular attention to the management, maintenance and development. The issues of energy savings and renewable energy for businesses and for the territory arose with the development of the Territorial Energy Climate Plan of the city. Participate in GO ECO project was an opportunity to improve the support on this theme and benefit from a European momentum to address these issues and develop projects.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

These energy-saving issues and renewable energy development developed in our Energy Climate Plan found a special echo in this business park which includes the flagship projects in terms of energy (geothermal network, an energy recovery plant waste), but also a culture of common projects and the presence of an active association of business leaders. The energy savings are potential levers interesting development for our business park, particularly in times of economic crisis like the one we are experiencing. The renewable energy development in this area is an opportunity for companies to diversify their energy mix. It is also an opportunity to modernize the image of this area and make it attractive.

What were your most important lessons learned during your cooperation with the goEco project?

For small and micro businesses, the economic question is the predominant input to address the topic of energy. Attract and gather companies are time-consuming steps. To be effective in this kind of project, it is more efficient to organize "small" targeted work meetings, rather than "large Masses".

What was the most important benefit that your business park gained from goEco?

goEco helped to better understand the functioning of the energy area. It was also an important way to raise awareness on energy efficiency issues and renewable energy. The support and the monitoring released by ARENE IDF allowed us important expertise: Expert operation, energy diagnosis, innovation ... Bring concrete solutions to funding the operations and know-how in assembling projects have been real and gave us credibility to continue actions.

What did you miss in the goEco project and what would be helpful for your BP in the future to continue working on energy efficiency?

The engineering to develop energy projects requests two qualities: technical and time! These are two elements that we need to ensure sustainability of the project over the long term.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

The urban community will continue to work on this topic. We expect a "snowball effect" to develop new actions. The common projects will be studied and promotion of renewable energies will also be made. In the business park, three interesting energy actions will be followed: geothermal heating, energy recovery on the waste unit and the development of biogas delivery station for the bus fleet.

3.2 Interview with Lech Wronka, Representative of the Local Heating Company at Kokoszki Business Park, Gdansk

Why did you participate in the goEco project?

We have participated in the project goEco because we found out that the goals of the project were in line with the goals set by the Heating company – mainly focused on energy efficiency

Why do you think it is important for a BP to care about the sustainable production and use of energy?

Sustainable production and use of energy allows us to boost resource efficiency and reduce company's operational costs.

What is your strategy on energy efficiency and renewable energy?

Our strategy is to optimize the company's operations and to reduce sometimes too bureaucratic procedures.

What were your most important lessons learned during your cooperation with the goEco project?

Promotion of energy efficiency measures and raising awareness in this respect (as it was done within the goEco project) may result in investment decisions. One example could be modernization of the district heating substation (transition from high to low parameters) located at the premises of one of our clients. It translates into better operation of our district heating network and increases safety at the clients.

What was the most important benefit that your business park gained from goEco?

The opportunity to consult modernization plans and familiarize with modern technologies in energy efficiency and renewable energy sources thanks to trainings and seminars provided under the goEco project.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

Yes, we will. Currently we are implementing the project on linking our heating system to a gas-fired CHP power plant and combined with reduced utilization of coal in our heating plant in Kokoszki. We are also planning to modernize two of our district heating substations (transition from high to low parameters).

3.3 Interview with Andreas Foidl, CEO of Berliner Großmarkt

Why did you participate in the goEco project? What is important for you in terms of energy efficiency in your field of responsibility?

We must be aware of the fact that the operating costs are the second rent. It is crucial for a company in order to stay competitive to maintain this second rent as low or constant as possible. This is the reason why we participate in this project.

Why do you think is it important for a business park to wonder about the sustainable use of energy?

Well, it does not apply for every business park, but I think you have to regard the size. And we are an area of 33 ha and 250 users; 250 tenants and therefore it makes sense that we care about how we use energy, as we are a big consumer; we have around 18,000 MWh energy consumption for this area per year; so we think for the whole area not only for us as a company. Just because of our size. This is vital, only the size is important.

Because the result is that you have a huge energy consumption.

Exactly.

What is your strategy as Business Park in the field of energy efficiency and renewable energy?

Well, on the one hand we want to stabilize the costs with a reasonable and modern energy management; we even try to cut down the costs. On the other hand we want to create a data base with which we can act as energy consultant for our users, in order to help them to use energy as reasonable as possible and if possible to lower energy consumption.

What are the most important learnings for you out of this project?

Currently, the most important learning is, that it is unbelievably intricate to find a reasonable data base in this old property; after all the property has been operated since 1965. We were surprised to find a very diverse meter structure. And finally, we had to bring all the participants in; we are a very heterogeneously run area with very different tenants, who work all on their own responsibility. Therefore it is a very elaborate process, as well in the collection of data as in the process of addressing every single participant.

Which is so far the greatest success or the most positive accomplishment of this project?

The greatest accomplishment is the transparency. To get a feeling for the fact of where and how much energy is consumed. To create a basis of comparison, which we did not have so far, is the greatest benefit of the whole process.

What would you like to have, additionally? What did you miss until now? What would have been a useful add-on but did not happen?

Basically, I miss only a result. But this is due to my impatience. Essentially, I would like to have a functioning energy management system, because of the size of our area and because of the high number of users and our heterogeneous structure/infrastructure it is very time-consuming; and this is the only thing I miss. Apart from that everything is fine.

What would you like to do after the end of this project? What would be things that should be developed in future? Out of your imagination?

Well, to create a reliable data base, so that we could have a tool that shows our tenants how much energy they consumed in the past; how we would predict their energy consumption and to think about what we can do in order to help them reach the focused aim in the end. Energy consulting business to business so to speak.

Are there things to be changed in terms of infrastructure or so?

Yes, of course. We have an area from the year 1965, which is not modern any more, i. e. we have to create the suitable infrastructure, and the suitable network, in order to make it possible. I also think that it is important and reasonable to have a strategic investment; where there is no return on invest at the moment, but you cannot always measure in Euro, but rather in locational advantages and services.

As we know out of this project; you are also interested in sustainable, innovative generation technologies; is there something you plan?

Yes, recently, we have submitted a building application for a small wind turbine. We would have, as it were, the first wind generator really in the middle of the city. Here I am very confident, that we will achieve that. And after we have done this, we have, as it were, the possibility to think about more wind generators on this area. We are very good situated and have only little perturbation potential in this respect we could give it a try and we could amplify and complete our concept of running this site with renewable energies in addition to our photovoltaic system, which we already have.

Thank you very much.

3.4 Interview with Mrs. Judita Magová, owner of the Pořana-vlnárske závody,s.r.o. and Mr. Zoltán Mag owner LCWOOD s.r.o.

Why did you participate in the goEco project?

We are interested in the issue of increasing energy efficiency, and we were convinced that savings in energy costs can increase our competitiveness and thereby increasing our overall company profit.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

If the energy supply for companies is not cost effective then companies within the Industrial park will not be competitive. Prices and availability of energy are not only important in terms of a current situation on the market but also in terms of future development. From this point of view it is very important for the Industrial park to have an opportunity/chance to influence energy costs.

What is your BP's strategy on energy efficiency and renewable energy?



The company is interested in generating its own electricity from RES or CHP, particularly in the form of off-grid system since the current energy prices are high and part of the transmission charges create half of costs of energy. The current legislation does not allow it, but on the other hand, costs of investment in innovative technologies are very high with a long payback period.

What were your most important lessons learned during your cooperation with the goEco project?

Preliminary energy audits helped us to gain an overview of all possible energy savings in our company. Feasibility studies elaborated within the project showed us precise quantification of very specific energy leaks and there were suggested corrective saving measures with an exact evaluation of financial indicators.

What was the most important benefit that your business park gained from goEco?

Better understanding of which direction we should concentrate on and what exactly we should do regarding energy management in the future. The energy costs create 12 – 30 % of overall cost calculations of SMEs within the Industrial park and thus every possibility of reducing the energy costs represents a significant item.

What did you miss in the goEco project and what would be helpful for your BP in the future to continue working on energy efficiency?

A big minus was that the project did not cover the co-funding of the suggested measures from preliminary energy audits and feasibility studies. One of the suggested measures from PEA and FS which we decided to implement was the full reconstruction of our production hall but for this measure we would like to approach the EU funds. For this particular measure we have not made any significant progress since the overall approach to receive financial subsidies for micro, small and medium enterprises is legislatively complicated, financially burdensome and time-consuming eventually with an uncertain outcome of obtaining subsidies.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

We want to implement the suggested energy saving measures identified in preliminary energy audits and feasibility studies in stages depending on our financial condition. Our focus is targeted on these core technologies: reconstruction of the building envelope of our main production hall which is our priority for the next year and we launched the searching process for technical designers for this purpose, reconstruction of lighting of manufacturing premises and we are observing the current legislation regarding RES and CHP. The measures should contribute to maintaining and increasing production capacity in the Industrial park.

3.5 Interview with Edvīns Kozlovskis, representative of Port Magnat Business Park

Why did you participate in the goEco project?

We decided to participate in the project because our BP uses quite a lot of energy and we wanted to see if there are any real ways how to conveniently decrease the energy consumption and the payments for the energy. Also we have had good cooperation with Ekodoma in previous projects.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

This is a way how to attract new customers and it will get more and more important as time goes on. Also Latvian legislation is favorable for companies that are energy efficient and investing in sustainability. In some cases energy efficiency means that we can avoid energy delivery failures due to overloads. It has to be said that it is quite hard to find the appropriate measures which ensure high energy efficiency measures with reasonable investments and payback periods.

What were your most important lessons learned during your cooperation with the goEco project?

We saw that our energy consumption is bigger than we expected and also we actually did not know our real energy consumption. The main goal of our operation is to ensure smooth workflow in our companies and in many cases we did not consider that this can be done more energy efficient. Also we saw that there are many benefits of cooperating between companies but this in many cases is very technically challenging.

What was the most important benefit that your business park gained from goEco?

We understood the level of our energy consumption and we got the needed analysis on building renovations in our office buildings.

What did you miss in the goEco project and what would be helpful for your BP in the future to continue working on energy efficiency?

It would have been good that there would be a possibility of attracting co-financing for energy efficiency measures. Maybe it would be good in future projects that some of the project finances can be attributed for investments in energy efficiency.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

We want to implement a variety of energy efficiency measures. Now we have the analysis, which shows what criteria have to be met in order to make these measures economically and technically feasible. We hope that there will be a co-financing for these kind of measures. It would be good that the findings of the goEco project are used to prove the need of governmental support of energy efficiency measures and environmental protection because otherwise these project rarely are feasible.

3.6 Interview with Mr. Tomaž Damjan, technical expert at the BTC Ljubljana

Why did you participate in the goEco project?

Within the interests of reducing the negative environmental impact BTC is systematically considering vulnerable areas and pays attention to the responsible management of waste collection and recycling, rational use of water and reduction in consumption of non-renewable energy.

BTC is continually striving for implementation of ISO 50001:2011 international standard for efficient and active management of energy and natural resources. The standard requires the preparation of an energy policy with concrete objectives, established activities to reduce energy consumption and

control, verification of energy savings and planning for improvements. The ultimate objective of ISO 50001: 2011 is to help organizations to establish the systems and processes necessary to improve energy efficiency. Systematic energy management is expected to lead to a reduction in energy costs and reduce greenhouse gas emissions.

One of the basic requirements of ISO 50001 is performing of regular periodic energy audits. Actions of these reviews are the basis for preparing a plan for the implementation of measures to improve the efficiency of energy and water consumption. Since the area of BTC is very extensive, we have prepared a five-year plan implementations within which we will carry out a detailed examination of energy in all buildings. Cooperation with JSI – EEC and go-Eco enables exact match of project goals with further BTC energy sector development.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

In the context of a long-term, strategic and innovative business project initiative Mission: Green, we want all of which help create BTC and live with it, to encourage sustainable management of business partners and visitors.

Together with the "Jozef Stefan" Institute (Energy Efficiency Centre) we collaborate at the European project go - Eco, whose main purpose is the development and implementation of integrated energy concepts in technology parks. With the experience gained, our goal is to establish new approaches and integrated solutions for achieving energy savings and reductions in greenhouse gas emissions.

Several sustainability topics have been addressed in the scope of the go –Eco project, namely: waste, water and energy management.

Energy consumption is one of the largest controllable costs in the business premises, enabling the potential for variety of savings. New energy efficient technologies can improve working conditions and productivity. In BTC three solar power plants were implemented and produce electricity that is sufficient for average annual consumption of 430 households. By actively reducing energy consumption from fossil fuels, we are increasing the renewable energy use share in the BTC business park.

Sustainable development is becoming an integral part of our business practices and decisions, due to the overall success. We are confident that sustainable transition is possible for all business segments and can become a common practice among all stakeholders.

By adopting sustainable solutions, we can become a good example to all others.

What is your BP's strategy on energy efficiency and renewable energy?

Main devotion on energy efficiency and renewable energy within the BTC business park will be on the next topics: Savings in costs and energy consumption of 2-5% per annum, reduced negative influence on the environment and reducing CO₂ emissions, increasing the internal eco-index value, increasing competitive advantage of energy management services, achieving key business partners through future energy efficiency investments, added value for our business partners in a review of good practices and activities in the field of energy management and the efficiencies stemming from it, reinforcing the company's reputation and value of the BTC brand.

What were your most important lessons learned during your cooperation with the goEco project?



During goEco project most valuable experiences were gained through improved cooperation and dialog procedures with tenants. With numerous companies located within the BTC business park, each of the tenants has certain desires or suggestions for possible improvements towards decreasing energy consumption and the resulting costs. It is important, if not highly crucial, to pay attention to each of the business partner as they together represent mosaic of our core activities.

Next important lesson learned is that most frequent mistake in dealing with SMEs and energy efficiency is related with the copy-paste approach where peculiarities of each particular SME are ignored and proposed solutions are blind copies of general strategies and solutions. The first step in any strategy development is the evaluation of barriers which are the initial trigger for future strategy development.

What was the most important benefit that your business park gained from goEco? What did you miss in the goEco project and what would be helpful for your BP in the future to continue working on energy efficiency?

Project as such with its purposes and objectives completely met activities and ideas of our department (investment and technical development). The only thing that we would like to add is more detailed energy audits. As a project partner at go – Eco we understand that project goal was not development and implementation of integrated energy concepts with extended or detailed energy audit but only preliminary ones. But to understand and to integrate comprehensive solutions in the field of energy efficiency, detailed review of energy flow within certain structure is needed.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

Developing the idea of energy efficiency and living it in everyday life is one of the main future commitments of BTC Business Park. There are numerous plans of what we would like to implement in our building stock, integrated systems and backbone networks. For sure, main emphasis will still be annual reduction in energy use with regular replacement of obsolete technologies (HVAC, lighting, etc.). As already described, fulfilling demands of ISO 50001:2011 international standard for efficient and active management of energy and natural resources is one of the top priorities towards sustainable energy consumption with an emphasis on cost savings. Moreover, nothing is achievable as a single entity within the joint environment as our tenants, customers and business partners are leitmotiv for future improvements.

3.7 Interview with Representatives of IPOS, Helsingborg

Why did you participate in the goEco project?

For us the goEco project has been a valuable opportunity to learn from others as well as sharing our own experience on the subject. Through the project, we saw a valuable opportunity to continue our development in the energy efficiency area, thus reducing our emissions of greenhouse gases. We also saw opportunities to find additional synergies in our industry park through the networking aspects of go Eco.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

In general, all of society needs to use energy more efficient in order to reach a sustainable development and business parks is not exempt from this. There is also benefits in cutting costs thus



increasing the competitiveness of the companies involved. In addition, the relative concentration of companies in a business park creates more opportunities for inter-company synergies related to these kinds of measures than is present for stand-alone companies.

Projects like goEco can play a pivotal part in realizing this business park specific potential, by creating a forum for knowledge and experience sharing between the companies within each business park as well as between different business parks.

At Industry Park of Sweden, we approach all business park-wide issues with sustainability in mind, as we have already seen great inter-company synergies (both economic and environmental, often combined) with this approach. Our participation in go Eco is an opportunity to get even better in this topic.

What is your BP's strategy on energy efficiency and renewable energy?

Energy efficiency measures at Industry Park of Sweden are conducted at two levels. Some measures are being done at factory level, where the production process and/or individual equipment is optimized. However, at our business park we are also able to take a broader perspective where we can be on the lookout for potential synergies between the different companies at the site. Work at these two levels is conducted in parallel since business park wide projects may affect factory level measures, and vice versa. Our participation in go Eco has provided valuable input on both these levels. We have conducted calculations and feasibility studies on individual technical solutions, as well as worked with business park wide communications and coordination issues.

What were your most important lessons learned during your cooperation with the goEco project?

Even if we have worked with energy efficiency for a long time, there is always room for improvement. Through goEco, we have got new ideas on how we can work to further improve our energy efficiency and reduce our greenhouse gas emissions.

An important part in goEco has been knowledge sharing between the project participants, and the experience from how to organize this kind of network is very valuable when working with industrial symbiosis in the future.

Last, but not least, goEco has also strengthened our belief in industrial symbiosis as a concept. In the project we have seen great synergies from cooperation and knowledge sharing that is directly applicable to industrial symbiosis. With our experiences from the project, we think we can enhance the industrial symbiosis in the Helsingborg region even further and by this contributing to reductions of greenhouse gas emissions from other companies. While at the same time cutting costs, this can contribute to a truly sustainable development where emissions are reduced while Swedish competitiveness increases.

What was the most important benefit that your business park gained from goEco?

We have been able to learn from other business parks and how they manage different aspects of working with a cluster of companies. This experience is valuable input to how we can, and should, work with developing Industry Park of Sweden in the future.

What did you miss in the goEco project and what would be helpful for your BP in the future to continue working on energy efficiency?

At Industry Park of Sweden we have actively worked with energy efficiency measures for a long time. We also have a rather unique situation where we recycle large volumes of waste heat that we use internally and, thus, creates relatively cheap energy prices. The effects from this is rather long payback times in many of the feasibility studies conducted in goEco. Also, our high share of recycled, carbon neutral, energy makes it hard to find promising projects when evaluated through the goal of reducing greenhouse gas emissions.

Thus, projects goals concerning increased volumes of recycled energy would fit our situation better and create incentives that is sometimes hard for us to realize when only focusing on greenhouse gas emissions.

We think that goals regarding greenhouse gas emissions, renewable energy and recycled energy would complement each other greatly, and create broader incentives for the project participants, enabling more possible solutions in the context of the project.

Will you continue to pursue the aim of an energy efficient business park after the end of goEco? If yes, how will you do that? If no, why not?

Yes. We are certain in our belief that energy efficiency reduces costs and thus is economically beneficial for the business park. At the same time it reduces our environmental impacts, providing an opportunity to help creating a sustainable development in a commercial context.

We will continue our work from before our participation and add the experiences that goEco has brought us. As an example, we have initiated a site-wide project regarding lighting after the first feasibility study was conducted in goEco. In goEco, we also put focus on the usage of compressed air and what potential there is in proper steam trap maintenance. These examples, and many more, has increased the understanding and knowledge about energy both at the factory and business park levels, and will be important experiences in our future work on the topic.

We will also continue with the experiences from the networking aspects, where we will develop the site wide meetings where the different companies get a chance to meet and come up with new ideas for future synergies. We will also promote knowledge sharing between different actors, as it proved very useful in goEco. This will be done in various ways, for example education, study visits and/or joint projects.

3.8 Interview with Radek Janča, CEO of Sklady Hodonín

Why did you participate in the goEco project?

Our team of park's management is relatively small and the persons in charge are busy with daily tasks. In strategic planning we engage consulting firms and we welcomed the offer of SEVEN to help us find an optimum solution of our energy system development. The framework of an international project looked promising for getting access to experiences from other countries.

Why do you think it is important for a BP to care about the sustainable production and use of energy?

The most important precondition in doing business is to be competitive. In our case this means providing favourable conditions to our clients/tenants using the park's facilities. We cannot save energy disregarding the costs – we have to follow the trends set forth by the EU and our

government, which means to optimize our energy systems on the basis of regulated prices of energy and the available support schemes.

What is your BP's strategy on energy efficiency and renewable energy?

In the past years we have already installed a significant photovoltaic capacity on the buildings' roofs. The next task was to upgrade an obsolete heat supply system. The optimum solution proved to be a natural gas fired CHP unit which is still supported by a green bonus for CHP electricity. Operational support for new RES has been stopped and, without it, the energy produced from sources like biomass would be too expensive and technically problematic in our location. We follow also other areas such as efficient lighting and insulation of buildings, but currently possible measures have a payback too long to justify their implementation.

What were your most important lessons learned during your cooperation with the goEco project?

We believe that most important was conceptual planning considering both given technical requirements and potential additional benefits obtained from available support schemes. This means we had to optimize the design regarding both the installation costs and operation benefits while trying to maximize the indications evaluated under the subsidy programs.

What was the most important benefit that your business park gained from goEco?

Thanks to our co-operation with SEVEN we have been able to 1) develop a realistic solution to our basic problem – upgrading the heat source for the park's needs, 2) work out the concrete design and apply for investment subsidy and 3) implement this project and actually receive the expected financial support.

4 Experiences and lessons learned

The project revealed some important lessons that were crucial for the success of the project and will be helpful for future projects to consider:

- Although very different in their historical development, economic focus and structure all business parks have shown high potentials for energy savings.
- Communication with the business parks can be difficult and lengthy due to complex structures, many different key actors, lack of relevant data or obstacles with gathering of sensible data etc. Decision-makers and companies of business parks naturally focus on economic development and often lack understanding or capacity and know-how for energy efficiency tasks (apart from facility management).
- During the phase of data collection in the goEco project it became obvious that lack of relevant information is most common. This is probably one of the major problems to be highlighted as a result of this project and certainly a result of lack of energy management systems as well as energy monitoring tools in general. This is one of the key factors to achieve progress in energy efficiency measures and CO2 reduction.
- Ambitious climate change goals of the municipality where the BP is located are helping to address the issue of energy efficiency with the business parks on a management level and to stir ideas beyond very short payback times.

- Pilot and lighthouse projects can be of interest due to the effect on public awareness and the possibility to collect European, national or regional subsidies. If general interest in new technologies (cp. feasibility studies) does exist, BP faces many obstacles in pursuing implementation, e.g. involvement of companies, board of directors, financing issues, technical restrictions.
- In any case, activities are taking a long time period for discussion, planning and implementation (> 3 years). Urgent need for refurbishment or exchange of old technologies (heating, HVAC etc.) are able to accelerate the process.
- One of the more unexpected findings of the goEco project was that the situation in the business parks changes very fast and is quite unstable and therefore the payback period of different energy saving measures has to be very low in order to be implemented. This is due to continuous change due to growing and collapsing businesses, new or changing tenants etc.
- Measures which are not economically feasible will most likely not be implemented. Interest of the individual tenants and companies is in most cases strictly limited to short term effects on cost reduction (if any), depending on the share of the energy costs in the overall cost structure of a company. Activities should have a return on invest period lower than three years.
- Business parks and companies have a focus on non- and low investment related costs with high saving potential. Therefore, they focus on “easy” and cross-over technologies, e.g. lighting and energy management.
- Beyond the goEco project, the developed fact sheets and excel tools can be used in future in other business parks to calculate the energy saving potential and the economic feasibility of different energy efficiency measures. Business parks were pleased by the opportunity of the feasibility studies to look at innovative and sustainable technologies to get an idea about future investments. This can be a way to prepare actions in similar surroundings.
- The workshops revealed that BPs and SMEs are only looking at opportunities of financing/funding and common procurement, when the planned activities are assessed attractive even without funding and common procurement. If the results can be optimised by a common procurement approach or by finding a suitable subsidy, the chances for implementation of a certain measure are increasing. In most cases, partners were able to use the experience from the discussions with BPs and SMEs from the workshops to boost the implementation process. In the end, the management decision to use common procurement strategies or look for innovative financing options is dependent on the outlook for the individual task.