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UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



REPUBLIC OF SLOVENIA
GOVERNMENT OF THE REPUBLIC OF SLOVENIA

FOSTERING INCLUSIVE AND SUSTAINABLE LOCAL INDUSTRIAL DEVELOPMENT IN EUROPE AND CENTRAL ASIA

Second regional conference on the role of a new
generation of science, industrial and
technology parks

8-9 April 2014, Ljubljana, Slovenia



CONFERENCE REPORT

Fostering inclusive and sustainable local industrial development in Europe and Central Asia—The role of science, industrial and technology parks

Second regional conference on the new generation of industrial parks

**In collaboration with
the Ministry of Economic Development and Technology and
the Ministry of Foreign Affairs of Slovenia**

and

Supported by the Government of Slovenia

**8-9 April 2014
Ljubljana, Slovenia
Conference Venue:
Hotel Mons**

UNIDO

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List of abbreviations

APEMEPD	Association of Small Businesses of Wood Processors of Peru
BICRO	Business Innovation Agency of the Republic of Croatia
CI	Common Initiative
CU	Customs Union
EEC	Eurasian Economic Commission
EU	European Union
FDI	foreign direct investment
ICT	information and communications technology
IFI	international financial institution
IP	industrial park
ISID	inclusive and sustainable industrial development
IUMP	industrial upgrading and modernization programme
MEDT	Ministry of Economic Development and Technology of Slovenia
MFA	Ministry of Foreign Affairs of Slovenia
MIEPO	Moldovan Investment and Export Promotion Organization
NMS	EU New Member States
OECD	Organisation for Economic Cooperation and Development
R&D	research and development
RECP	resource efficient and cleaner production
SEE	South East Europe
SES	Single Economic Space
SITP	science, industrial and technology park
SME	small and medium enterprises
STP	science and technology park
TIDZ	technological industrial development zone
TPL	Technology Park Ljubljana
TTI	transfer technology and innovation
UNIDO	United Nations Industrial Development Organization



1. Acknowledgements

This report was prepared by Olga Memedovic, with research assistance support from Thomas Jackson and Silvia Fuereder. Georgina Wilde provided editing contributions.

Special thanks are due to the Ministry of Economic Development and Technology of Slovenia for their cooperation and support, including Janko Burgar, State Secretary of Economic Development and Technology, Tanja Permozer, Head of Division, DTI, Marjan Hribar, Director General, DTI, Janez Rogelj, Secretary, DTI, and Leni Balent, Advisor. Blanka Jamnišek, Ambassador, Permanent Representation of the Republic of Slovenia to the International Organizations in Vienna, also provided invaluable assistance.

The conference was supported throughout by UNIDO staff, including the Director General, LI Yong, and ZHAO Jie, Special Advisor to the Director General, Amita Misra, Director, Regional Programmes and Field Representation Branch, Nilgun Tas, Unit Chief and Deputy to the Director, Competitiveness, Business Environment and Upgrading Unit, Rene Van Berkel, Unit Chief, Cleaner Production Unit, and Petra Schwager, Industrial Development Officer, Cleaner Production Unit.

The conference was organised by the UNIDO Europe and Central Asia Bureau led by Olga Memedovic, and supported by Solomiya Omelyan, Gabriele Czasch, Emina Alic and Silvia Fuereder and Thomas Jackson; and the Technology Park Ljubljana, including Iztok Lesjak, Director and Kristina Ober, Project leader, PR and Marketing.

The organisers are grateful to all conference participants and contributors who provided valuable comments at various stages during the preparation of this report



2. Introduction

The objective of the regional conferences is to contribute to a better understanding of the role of science, industrial and technology parks in economic diversification and job creation in the present global setting, and to facilitate the establishment of a suitable knowledge platform for regional dialogue and cooperation on leveraging the static and dynamic advantages of parks for economic development.

The first Regional Conference for countries of Europe and Central Asia, entitled “Industrial Parks as a tool to foster local industrial development”, was organized by UNIDO and the Government of Azerbaijan in Baku, Azerbaijan and took place on 17-18 April, 2012. The discussions focused on the concepts and management of a new generation of industrial parks and resulted in the design and formulation of a regional action plan to enhance investment and industrial upgrading through parks. Following the conference, the Government of Slovenia expressed interest in supporting a regional initiative to establish a platform for regional dialogue and cooperation on industrial parks in their various forms.

Parks around the world vary considerably in terms of mission and scale and a fuller understanding of the differences is necessary in order to determine needs, set priorities and elaborate strategic planning, as part of the broader development of business infrastructure. Within this framework, the objective of the second Regional Conference was to take stock of the different types of parks, such as science, technology and innovation, distribution, manufacturing and integrated parks, and elaborate on their role in pursuing inclusive and sustainable industrial development. “Eco-parks” or “eco-industrial parks” specifically strive to combine environmental, social and business benefits, for instance through sustainable use of resources, waste reduction and recycling, and by hosting environmentally friendly technologies and companies.

The global financial crisis caused profound economic and social changes and helped to place job creation, innovation and economic diversification on national and international development agendas. Innovation and the knowledge economy have been receiving special attention in the EU and worldwide, and countries are looking at structures that promote innovative and competitive economic growth.

Many of the benefits of parks cut across the objectives of broader national or supra-national development strategies and action plans. This is evident, for example, in those countries of Europe and Central Asia that are aligning their strategies with the European Commission’s strategic document *Europe 2020*, which sets out three mutually reinforcing priorities— smart growth, sustainable growth and inclusive growth. The objective of *Europe 2020* is green economic growth based on knowledge and innovation, and job creation. Against this background, the new generation of industrial and technology parks, as concentrated and integrated development structures, need to adapt and develop new functions and services and produce new business models that enable emerging activities and sectors to flourish.



Transition economies, which are often characterized by market imperfections and barriers, frequently lack access to information, new technological knowledge, and finance. They also face high transaction costs because of a lack of infrastructure and weak institutions. Industrial parks catalyze a concerted effort to address such hurdles and provide a kernel for economic development. They are a useful instrument for fostering technological learning and innovation, and for creating jobs. With the potential to generate comparative and competitive advantages, industrial and technology parks attract innovative businesses, leading to more jobs and a larger tax base. They support start-ups, new enterprise incubation, and the development of knowledge-based businesses, and offer an environment where centres of knowledge-creation and firms mutually benefit through interaction.

Parks are an integral part of business infrastructure development, regional and local development planning, and overall social and economic development in the countries of the Europe and Central Asia region. Furthermore, parks are instruments for intensifying economic development through attracting investments, fostering local technological learning and innovation, and creating jobs. At the same time, it is important to consider that the impact of a park is dependent on many factors, not least its scale relative to the local economy, available resources and public expectations. Planning, dialogue with stakeholders and regulation are therefore vital to maximize potential, attract tenants and ensure investor confidence.

There are many terms employed to describe parks, such as technopolis, science park, science city, cyber park, hi-tech (industrial) park, innovation centre, R&D park, university research park, research and technology park, science and technology park, technology park, technology incubator, technopark, technopole and technology business incubator.¹ The broad concept of high-tech clusters may encompass the above terms, but differences between the various parks become apparent when their focus and contextual background are analysed. For instance, science and technology parks tend to be common in Europe, whereas research parks are widely used in North America. The main differences between the two concepts relate to size and activity: science parks tend to be smaller, have links to academia and are less focused on manufacturing activities, while technology parks can be larger and host a variety of productive activities.

UNIDO has provided technical assistance in establishing and managing industrial parks and related facilities in emerging economies in Asia, Africa, Latin America, and Central and Eastern Europe. Given its international outreach and worldwide contacts, UNIDO has a comprehensive perspective and understanding of the industrial needs of governments and economic sectors in developing countries and transition economies. UNIDO has earned a reputation as a neutral and

¹ Opinion of the European Economic and Social Committee on 'European Technology, Industrial and Science Parks in the crisis management, preparation of the after-crisis and post-Lisbon strategy period' (2011/C44/22), *Official Journal of the European Union*, 11 February 2011, para. 3.4.



honest broker between technology leaders, front-runners and technology users, adopters, and beneficiaries.

The Regional Conference is organized in collaboration with the Ministry of Economic Development and Technology (MEDT) and the Ministry of Foreign Affairs (MFA) of Slovenia. Financial support is provided by the Government of Slovenia and UNIDO.



3. Topics and outcomes of the conference

The conference focused on the following main topics:

1. Designing programmes and policies for science, industrial and technology park development

In many countries, including in the Europe and Central Asia region, there has been little strategic planning to promote the development of industrial zones, industrial and technology parks, business incubators, and industrial agglomerations such as clusters, and it is thus necessary to establish all the elements of the business infrastructure based on examples of best practice from other countries and regions.

Countries need more focused and integrated approaches, geared towards sustaining and developing a new generation of science, industrial and technology parks. Particularly in the crisis and post-crisis context, a more comprehensive strategy should be followed, to capture the potential benefits of parks for economic growth and competitiveness. The development of a new generation of parks has to be encouraged and the role of parks in shaping innovation structures should be promoted.

Clear and comprehensive programmes and policies need to be elaborated for each industrial park to ensure the development of a cohesive park community. Such programmes and policies could elaborate on the types of industries and technologies to be targeted, general working conditions, the location of each firm in the park, and so on. Such policies would also determine the types of funding to be used by an industrial park and the share of public and private investment in the total investment flow. If for some reason in the future, the park's priorities change or funding is not sufficient, policies could be modified accordingly. The key to the success of an industrial park, as an innovative tool for inclusive industrial development, is the way it is designed and managed. Because there are numerous different aspects that need to be considered, it is important to build up the local capacities of beneficiaries relating to the design, planning, development and management of a park.

2. Common infrastructure and service provision

Targeted activities in the park require various inputs, including power supply, telephone and internet connectivity, water supply, waste treatment, logistical services, and residential facilities. As the relative importance and demand for each input depends on individual firms' needs, an industrial and technology park must offer a full range of these and other services such as technology and productivity centres, educational institutions and so on. In some cases, large-scale infrastructure such as ports, airports and major highways are indispensable in order to achieve high efficiency. Regional infrastructure in the immediate neighbourhood, such as road access, apartments, and power



substations, are as important as the large-scale facilities. In most cases, it is worth emphasizing that the provision of these services is the responsibility of the host country, which requires close coordination among ministries, regional governments, and public utility companies.

Industrial parks usually have common facilities, for example, for incubation, professional and apprenticeship training, conferences and exhibitions, health, firefighting, waste management and treatment, and customs.

In addition, an industrial park should cater for a comfortable work-life balance. Hence, it should also be able to provide its employees with various services. Building a set of financial and other commercial services for entrepreneurs and employees in the park will increase its convenience. The park community can dedicate more time to work and leisure due to reduced traveling time to and from these services. Building hotels or even residences and leisure services will attract more investors to the area as well as a workforce.

3. Appropriate location of industrial parks

The decision on the location of an industrial park is critical for its contribution to inclusive and sustainable industrial development over its entire lifetime, typically of many decades.

The location decision should be guided in the first instance by the location demands of targeted future tenants. Consumer goods industries require access to large markets and/or excellent distribution infrastructure. Resource industries are located close to the resource (e.g. mines) or bulk transport infrastructure (such as seaports). Labour-intensive industries will settle close to a large supply of skilled workers, and technology and innovation companies would normally settle in close proximity to major universities and research establishments.

When choosing the location, the local environment should be studied and considered, including the cultural and natural heritage values of the region and how to conserve these now and in the future. Siting an industrial park on flood plains or close to biodiversity spots is to be avoided. Careful choice of the location of labour-intensive industrial zones can reduce the societal burden typically associated with migrant labour communities. A comprehensive environmental and community impact assessment is required to determine possible adverse impacts and establish adequate mitigation and control measures.

Moreover, detailed master plans are needed to guide infrastructure and its management over time. The creation of buffer zones around the industrial parks is also necessary. Their size should be commensurate with the type and risk profile of the industrial park, and once confirmed an ongoing and concerted effort is required to maintain the buffer zones. Industrial zones have sometimes attracted illegal settlers in close proximity, which in turn may cause logistical problems in accessing the industrial zone, and adversely affect emergency preparedness and response measures.



Finally, the realization of an industrial park also requires the acquisition of land from landowners. While the development of an industrial park is expected to serve the national development agenda, the interests of the current landowners cannot be overlooked. As with any infrastructure or urban development, the landowners should be adequately compensated and, as far as possible, provided with assistance to re-establish their livelihoods elsewhere.

4. Linking parks with other knowledge, innovation and productive hubs

Parks have proved to be a key regional development tool, combining a mixture of physical (land, housing, laboratories, offices and public spaces) and intellectual (growth acceleration services for companies, and job and wealth creation) infrastructure. They support regional economic revitalization, competitiveness and internationalization. In most cases, the initiative to establish a park originates with public authorities, but public-private partnerships have also been effective. One of the roles of parks is to balance the relationship between the stakeholders. Parks' external stakeholders, such as innovation and productive hubs, regional governments, universities, research centres or other tertiary institutions and organizations, are a source of entrepreneurial ideas, innovation, technology, and private and government-funded research results and spin-offs. Parks should thus link knowledge, innovation and productive hubs and in this way contribute to raising the competitiveness of the local economy.

Discussion points:

1. Park concepts, roles and expectations against a background of international and national development strategies to create dynamic clusters as a means to accelerate economic growth and economic competitiveness.
2. Park specialization and the expectations of various stakeholders, such as industry, firms, academia, local authorities, employees and other civil society stakeholders.
3. The role of parks in realizing the objectives of national and regional inclusive and sustainable industrial development strategies; the relationship between parks and innovation strategies, networks and infrastructure; best practice strategies for industrial parks within broader development strategies.
4. Assistance required in the preparation, implementation and monitoring of the strategic regional programme for the development of business infrastructure, i.e. assistance in the preparation of the relevant regulations and legislation for establishing business infrastructure.
5. The role of parks in linking universities and industry in the region.



4. Opening statements

4.1. His Excellency Mr. Janko Burgar

State Secretary and Deputy to the Minister of Economic Development and Technology of Slovenia

Mr. Burgar mentioned the support that the Slovenian Government is offering for UNIDO's regional project on science, industrial and technology parks, and discussed the significance of science, industrial and technology parks in supporting economic development in many EU member states. Industrial and technology parks are places where dynamic entrepreneurial activity contributes to industrial change, enhances innovation, supports small and medium enterprises, and creates jobs. It is important to combine physical and intellectual infrastructure to support growth and industrial change, smart specialization and the concentration of resources and knowledge. Particularly in this crisis context, the development of holistic approaches to the generation of parks as areas of innovation has to be noted and encouraged.

Mr. Burgar highlighted the importance of working with various stakeholders to draft policies to encourage and create the conditions for competitiveness in the Slovenian economy. Some firms in Slovenia have formed an entrepreneurial support eco-system under the initiative known as "Start-up Slovenia". These organizations optimize resources and focus their efforts on developing an entrepreneurial environment, which has a multiplicative effect and drives the generation of new jobs. The role of Technology Park Ljubljana, the co-organizer of the conference, in designing and co-creating initiatives for entrepreneurs in the Slovenian economy, should be especially stressed. Through its positive impact at both the regional and national level, Technology Park Ljubljana represents an example of best practice both in Slovenia and the broader South East Europe region.



H.E. Mr. Janko Burgar, State Secretary and Deputy to the Minister of Economic Development and Technology of Slovenia



4.2. His Excellency Mr. LI Yong

UNIDO Director General



(l-r) H.E. Mr. LI Yong, Ms. Olga Memedovic, Ms. Amita Misra and H.E. Mr. Janko Burgar

The Director General highlighted the need for a new development approach, which looks at society, the economy, industry and the environment as a whole, and is based on profound changes in patterns of production and consumption. Ideas of economic growth, and the policies that underpin them must be linked to environmental sustainability and social and economic inclusion.

UNIDO's Member States adopted the Lima Declaration on inclusive and sustainable industrial development at UNIDO's last General Conference in December 2013 in Lima, Peru. This Declaration has reinforced the mandate of UNIDO as an effective provider of policy advisory and technical cooperation services to support the industrial development of its Member States in a manner that promotes economic growth while enhancing social inclusiveness and ensuring environmental sustainability.

The second Regional Conference, as its predecessor in Azerbaijan, is one of those key activities that support UNIDO's role as a facilitator of knowledge and advice on policies and strategies towards the achievement of inclusive and sustainable industrial development. Industry, manufacturing and productive activities are



drivers of technological learning, innovation and economic development. They are vital for job creation, sustainable livelihoods, food security and equitable growth, and are key requirements for eradicating poverty in low- and middle-income countries

In light of discussions on the future of industrial development, the conference is highly relevant and timely, and serves as a platform to exchange knowledge and advice on industrial and technology parks, as important tools to realize the objectives of policies and strategies aiming to create knowledge-based and diversified economies, boost green growth and achieve inclusive and sustainable industrial development. Such parks should be an integral part of long-term development strategies, as they provide the fundamental business infrastructure that attracts investment, rewards entrepreneurship and ensures the generation and flow of knowledge and technology.

By improving their business infrastructure, countries enhance the general business climate. This, in turn, strengthens competitiveness and productivity, encourages investment as well as research and development (R&D) and innovation, and the use of information and communication technologies. An effective business infrastructure requires multi-layered management, ensuring synergy between the various levels of government—national, regional and local—and partnerships between business, government, universities, and civil society. This enables the creation of broad links between knowledge generation and commercialization.

The new generation of science, industrial, technology, and innovation parks is thus a key component of business infrastructure. It is entirely consistent with the objectives of separate but cross-cutting development strategies linking science and technology, innovation, job creation, education, and regional development, as well as environmental sustainability and social and economic inclusion.



4.3. Ms. Olga Memedovic

Chief, Europe and Central Asia Bureau, UNIDO

To provide some background to the conference, I will outline the economic situation in the Europe and Central Asia region, as well as the objectives, goals and highlights of UNIDO's regional programme on science, industrial and technology parks (SITPs).

The first regional conference on industrial parks, in Baku, Azerbaijan on 17-18 April 2014, gathered over 20 participants from the Europe and Central Asia region and resulted in an action plan to establish an interactive knowledge platform, and a network of experts and international and regional institutions to work together on the issues related to the role of industrial parks for sustainable development. The regional programme has successfully attracted international support, in particular from the governments of Slovenia and Romania, and received multiple requests from countries in the region for technical cooperation assistance and project design.

The objective of the programme and the conference is to establish an interactive dialogue, to promote knowledge and share information about best practice in the area of business-related infrastructure (SITPs in their various forms), and to discuss how to leverage this tool to pursue and foster inclusive and sustainable industrial development.

Why do we need to do this and why is it necessary to foster inclusive sustainable industrial development in Europe and Central Asia? This region encompasses 28 highly diverse countries in terms of geography, economic structures and natural resource endowments. The region contains high-income, middle-income and low-income countries, but they all face common challenges. For instance, they are experiencing growing social exclusion, environmental degradation and high unemployment rates. Around 30 per cent of the region's population live below the poverty line, there are 31 million economic migrants, 35 per cent of the population work in the informal economy, and youth unemployment is over 35 per cent in some countries. Gender equality in some countries is lagging behind Western European averages. The region is also suffering slow economic growth. Countries are not trading with each other as much as they could due to shallow regional and global economic integration. Diversification of the industrial base tends to be narrow in many countries, although in some parts of the region there is promising progress in the development of new environmental technologies. In terms of environmental performance, the region is still one of the most energy-intensive in the world; renewables represent a small proportion of the energy mix and fossil fuels continue to dominate primary energy supply.

In response, we have to use all the available tools to help the region pursue inclusive and sustainable industrial development. SITPs, in their various forms (clusters, industrial districts, cities, regional innovation systems, etc.), have this critical potential. They can mobilize local assets and talent pools, leverage the history and culture of a region and become kernels of growth and innovation.



They can drive innovation, create new markets and enhance local competitiveness. By creating jobs, they contribute to social and economic inclusion. Importantly, SITPs also offer high quality working and living environments.

The purpose of this conference is to address conceptual issues, to discuss the importance of SITP location, infrastructure, utilities and transport links, and issues relating to regulation and the strategies, policies and programmes for developing SITPs. The conference also covers synergies with regional development policies, and science and technology policies, as well as national level industrial policies. There are complex questions concerning targeted industries and technologies. Further issues relate to SITP management, business development infrastructure, linkages with other knowledge and science pools, leveraging these static aspects to promote innovation, technology transfer, industrial upgrading and diversification, to attract foreign direct investments, and to pursue sustainable production and consumption patterns.

The goal of the programme and the conference is to establish a knowledge platform for use by a network of stakeholders, policymakers, experts and institutions, not only to exchange views and experiences but also to create a critical mass of knowledge. The knowledge will help to benchmark successful industrial parks in the region and help stakeholders to design strategies and policies for the development and management of SITPs. The programme's target beneficiaries are governments, the business community, academia, international organisations, such as UNIDO and its sister organizations, and international financial institutions (IFIs).



5. Introductory presentations

5.1. Designing programmes and policies for SITP development

Mr. Stephen Taylor, AREA Science Park, Trieste, Italy

The presentation focused on SITP and incubator development best practice, based on the example of AREA Science Park in Trieste, Italy. Mr. Taylor provided a private-sector perspective on innovation, as well as insights into the investment of public funds to drive innovation.

Innovation

Creativity generates ideas, which in turn lead to innovation and new technologies and ways of doing things. These inspire future generations who will go on to be creative, to drive and generate new ideas, innovations and technologies. The presentation therefore outlines not only the simple mechanical process of building SITPs, but how to build a better future.

AREA Science Park applies general principles that are valid for SITPs around the world. In an era of increasing virtual agglomeration, SITPs are sometimes viewed as anachronistic and outdated. While virtualization, digitalization and new media technologies are important, the world is not yet ready realistically and pragmatically to exist purely in a virtual way. Face-to-face contact is still important to sharing ideas. Putting people together—intelligent people, researchers, people from different disciplines—helps to generate new ideas and bridge gaps between disciplines. Indeed, one of the main roles of SITPs is to close the gap between research and industrial communities.

Huge resources are invested worldwide in education and research, and this should yield economic benefits. Generating research results without providing the industrial opportunities

*Innovation means
bringing new value to the
market*

to apply them, however, will mean that the economic benefits of one country's investment will end up being exploited elsewhere. Under such circumstances, investment in education and research makes little sense. The public sector should therefore invest in more than education and research because it also needs to provide the opportunities to exploit that investment to bring value to citizens, who provide the tax revenues in the first place that permit public-sector organizations to invest. For instance, without the critical early support provided by the incubator at AREA Science Park, a number of highly innovative companies would not exist, and neither would the employment opportunities they created. If graduates and those with masters and doctorates do not have the opportunity to use their qualifications in a productive way, they will seek to apply their skills elsewhere.

Bridging the gap with industry helps to extract the true value of research, which then flows back from the market up the value chain to where the idea originated.



Bringing new value to the market and to customers encourages and facilitates the creation of new firms.

Public-sector investment

AREA Science Park receives an annual public-sector grant worth between seven and eight million euros. For every euro given by the Italian Government, the park generates two euros of additional revenue in competitive bids on international projects. In addition, for every euro that the government gives to the park, it receives back a minimum of five euros in tax revenue thanks to the park's annual turnover of €180 million and the taxes of the 2,500 people who work there. Thus, the government's investment has a 500 per cent return, without even counting the intangible benefits and the impact on the region of having an innovation-generating organization.

Economic growth improves citizens' quality of life, not only because more money is churning around in the economy but also because innovations are being brought to the market. Innovation is about bringing value to the market and that value enhances quality of life. SITPs have a key role in driving innovation at every level in every country. Innovation is high-tech, but it can also be medium-tech, low-tech, and even no-tech. SITPs bring people together to share problems, solutions, ideas and questions, and generate new thinking. The process should be an unbroken chain starting from the idea, to the research and development stage, and then to the development of products and services that can be successful in the marketplace.

There are complicating factors that need to be considered. For instance, for every good idea, there are hundreds of bad ideas. So we need a filtering process. For every euro that a customer spends in the marketplace, a tiny fraction of that amount finds its way back to the person who generated the idea. We need systems that are coherent, that allow ideas to flow to market and allow the resources to flow back. Public-sector organizations help to do this through investments in education and public-sector research, as well as maintaining a system of intellectual property management and rights.

Linking researchers with industry

In a digital world, some people consider that technology transfer can be achieved simply by putting research results on a website and waiting for industry to find them. The problem is that there are thousands of websites and experience shows that small business owners are not spending their time browsing the Internet looking for online research. This is not the best way for them to interact with the research community. You need an innovation management system at the heart of an organization. SITPs can be the hub around which a series of innovation-generating services can be built. AREA Science Park has evolved an innovation management system over many years, developed through experimentation and trial and error.



SITPs can map local industry needs and work with small business communities to give them access to research results. An SME or a micro-company with ten employees or fewer does not have an R&D department. These are not structured organizations, but they need connections—facilitated by an intermediary—with the research world. AREA Science Park performs this role by talking to business owners, discussing their needs, and finding matching competences in a research organization.

SITP support in bringing research to market

The commercialization of research results is a complex process. SITPs are an opportunity to invest in excellence, not necessarily in the best example of a particular technology in the world, but in technologies that have the strongest impact in a region. SITPs can look for research results that have commercial potential; they conduct market research and due diligence, intellectual property research, and assessments on patents and licences. The result can be the development of a collaborative research project bringing industry and research communities together or a new spin-off start-up company. These strategies all have the potential to generate economic activity and create jobs.

AREA Science Park has developed an incubation strategy over several years. For start-up companies it is a simple equation: in the beginning, there are many ideas, but they have high risk and low value. Over time, the ideas that have little value are eliminated and the chances of getting the remaining good ideas to market are improved. Unfortunately, putting this into practice is more complex. You need a strong team to develop the product or process and create a strategy. AREA Science Park provides team-to-team assessment training, seminars, organizational design and external consultancy. The park builds up products through technical feasibility studies, proof of concept, patent ability and technical assessments, as well as a marketing strategy based on market assessment and support structures necessary to bring a product effectively, efficiently, productively and legally to market in multiple countries.

From day one start-up companies need a global outlook and strategies that put them in a position for future global expansion.

About 20 or 30 years ago, it was common in Italy to build SITPs on a real estate model. These parks did not tend to drive economic growth because an SITP is not about the number of buildings or green spaces, but the services that bring people together in those buildings to enhance their competences, enhance their capabilities and allow them to do more. In other words, to exploit research results, create start-up companies and conduct business intelligence to enable firms to market their goods and services effectively. They also need to conduct strategic and technological assessments to gauge their position vis-à-vis competitors. AREA Science Park provides services such as desk analysis, benchmarking, and innovative material support, to help drive innovation from the research community to the industrial community.



5.2. Parks best practice and UNIDO assistance

Ms. Nilgun Tas, Director, Business, Investment and Technology Services Branch, UNIDO

Evolution of parks

Park developers have always aimed at supporting productive capacities to boost trade and, through increased prosperity, improve the quality of life. The first parks date back to 1705 in Gibraltar and the 1840s in Hong Kong. In these cases, and later in Singapore, the primary objective was the development of productive capacities and the promotion of trade. They provided logistical, financial and insurance services and were located on key trade routes for minerals, agricultural goods and—in the early days—slaves.

The early 1920s saw the emergence of a variety of special areas, such as customs zones, free trade zones, free ports, free zones, industrial estates, industrial parks, science parks, technology parks, export processing zones and special economic zones, all offering

We rely on production and trade for much of our food, medicines, clothes and furniture.

services to support trade and industry. From the 1950s onwards, science, research and technology parks emerged in many industrialized countries charged with bolstering innovation by linking researchers and industry. Examples include Stanford Industrial Park (1951) in the United States and Sophia Antipolis (1969) in France. More recently, we have seen an increasing number of eco-parks, eco-industrial parks, eco-towns and eco-cities. To an extent, the labels applied to parks reflect the objectives of park promoters, as well as global trends and the fashions of the era in which they emerge.

Objectives of park promoters

Policymakers use parks as instruments to realize a variety of goals. In terms of industry and trade, parks improve the competitiveness of goods and services, and they support investment policies by providing incentives for foreign and domestic investors. Parks create employment opportunities, higher quality jobs and decent work conditions (labour and employment policy). Regional and local development policymakers use parks to create development nodes and disperse economic activity within a country. Parks support science, technology and innovation policy goals through the fostering of innovation, technology transfer and new high-tech businesses. They can also support environmental policy through the creation of green businesses and by reducing the impact of industry on the environment and local populations. For instance, in the tannery

Parks support environmental policy through the creation of green businesses and by reducing the impact of industry on the environment.



industry, parks have been established far from residential areas to reduce any impact of polluting effluents. Additional benefits include collective efficiencies generated from setting up environmental protection systems for the resident industrial entities.

Parks designed with too many policy objectives may generate excessive factor and transaction costs. Even when policy objectives are mutually reinforcing, collaboration between different stakeholder groups, particularly in the public sector, creates a coordination challenge. Parks conceived as fulfilling several objectives, such as rural development, industrial growth and the development of trade, science and technology, may struggle to meet all the conflicting requirements. There will always be trade-offs. Transport infrastructure is important for industry and trade, but tends to be less integrated in rural areas. Park promoters have therefore to consider the complexity of what is required by the different stakeholders.

Characteristics of parks

Parks are essentially real estate: pieces of land with infrastructure, roads and utilities. Therefore the initial decisions facing developers relate to location and size, proximity to universities and research centres, the presence of residential areas with schools, health and recreational services, transport and communication facilities, and research and innovation clusters. Other strategic questions need to be considered. For example, is the area prone to natural disaster and is the terrain flat? The wrong location, even a few dozen kilometres from a port—particularly in low-income countries—could be a costly mistake.

The size of a park depends on the type of businesses it is designed to accommodate. Size may vary from ten hectares to thousands of hectares (e.g. in 2010, the Shenzhen Special Economic Zone covered an area of approximately 50,000 hectares—and it has since expanded). Industrial parks usually start at around 100-150 hectares in the planning stage and are built in phases based on demand, with allowance for the possibility of expansion. Small parks tend to be expensive to develop unless business activities can be accommodated in multi-storey buildings (e.g. software development, trading and business services), since the required infrastructure investment is not cost effective.

The extent and nature of the infrastructure, incentives and public services offered, such as special customs provisions, tax subsidies, loans services, and amenities, depend on the objectives of the park's promoters. Roads and pavements, utilities and landscaping are basic requisites. The last is important to control climatic conditions in a park. A line of trees around a park generates a clean air exchange between industrial activity in the park and the external environment. Trees also act as a wind break. In terms of utilities, water, electricity, waste water disposal and natural gas are required. Park promoters also need to invest in management and administrative buildings, a fire station, a medical service centre, commercial services, a bank, a post office, a cafeteria, a parking lot and, if necessary, weighing stations for trucks.



Parks need incentives to attract target tenants. This is where international good practice advocates public-private partnerships for park implementation and management. Both sectors have their advantages but only the public sector can resolve policy challenges and offer incentives. For instance, governments provide fiscal incentives (e.g. customs and corporate tax exemptions or reductions for limited periods) and “one-stop-shops” for administrative procedures (e.g. business registration, licensing and construction permits, land titling, and visa processing for foreign staff, etc.). Financial incentives in the form of loans and guarantees may also be offered by the public sector, as well as other services such as vocational schools, apprenticeship centres and other public services. Some or most of these can only be offered by governments.

Lessons learned

Parks must have a business case. The presumption that tenants will automatically locate to a park once it has been established is not borne out by experience. Parks are not immune to broader challenges in a country, particularly those related to governance and corruption. There needs to be a clear, unique vision and objectives, and a high-level political commitment to addressing investors’ prime concerns.

Location is critical to meet the objectives and complement the competitive advantages of the country, of the region and of the locality. Public funds should be made available to meet infrastructure costs, not least those required outside the park. Providing water, electricity and gas, if they are not already available, requires investment, as well as advocacy and lobbying.

Experience shows that park developers need patience and determination, patience to wait the possible ten years for results to appear, and determination to continue in the face of bureaucratic obstacles and other forms of opposition. Stakeholders must take a long-term perspective and go through extended planning processes, including building capacity and consensus among stakeholders. Administrative capacity should also be considered, since it is bureaucracies that are charged with transforming policies into projects and seeing them through to implementation. Consultants and donor experts cannot bypass any critical weaknesses in government bureaucracy

It is the responsibility of the public sector to conduct strategic planning for a park, undertake the study-phases, resolve the regulatory and institutional issues, and engage with partners. In this regard, it is important that domestic and foreign investors are given equal treatment. There are many public-private partnership (PPP) modalities, and surprisingly those led by the public sector have often yielded successful results. Hence, more private involvement is not automatically the best option.



UNIDO assistance

Since the 1970s, UNIDO has been an active advisor and partner to its Member States in strategic planning, design, launching and management of industrial parks and estates, export processing zones, special economic zones and eco-industrial parks around the world. Countries have benefited from UNIDO's expertise in capacity-building assistance at different stages of industrial park development, and in strategic planning for targeted industries that extensively use factors with cost advantages and that are in relative abundance (e.g. in Côte d'Ivoire, Nigeria, Peru), or as part of comprehensive UNIDO industrial upgrading and modernization programmes (IUMPs). UNIDO has assisted in the preparation of pre-feasibility and feasibility studies (e.g. in China, Côte d'Ivoire, Ethiopia, Iraq, Nigeria and Viet Nam), and has facilitated public-private partnerships, and in addressing regulatory and institutional issues (e.g. in Côte d'Ivoire, Iraq and Nigeria). For an example of UNIDO's current industrial park assistance in Côte d'Ivoire, see Figure 1 below.

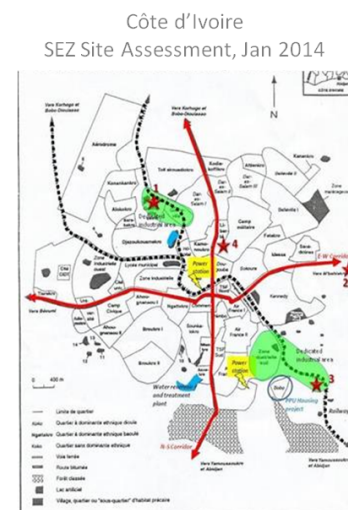
In attracting domestic and foreign investments aligned to comparative advantage, industrial parks contribute to inclusive and sustainable industrial development (ISID).

Figure 1: UNIDO's assistance in industrial park development in Côte d'Ivoire

Examples of UNIDO's current industrial park assistance

• Côte d'Ivoire

- Benchmarking of good practices on SEZ development in the region and globally to position a textile and garments focused SEZ in the country
- Assessment and capacity building in the country on SEZ planning, design, management and implementation, including through Public Private Partnerships (PPP)
- Assessment of SEZ sites and their comparative advantages
- Formulation of a roadmap for SEZ development
- Review and recommendations on legal and regulatory frameworks for SEZ





5.3. Industrial and Technology Parks: Catalyzing inclusive and sustainable industrial development

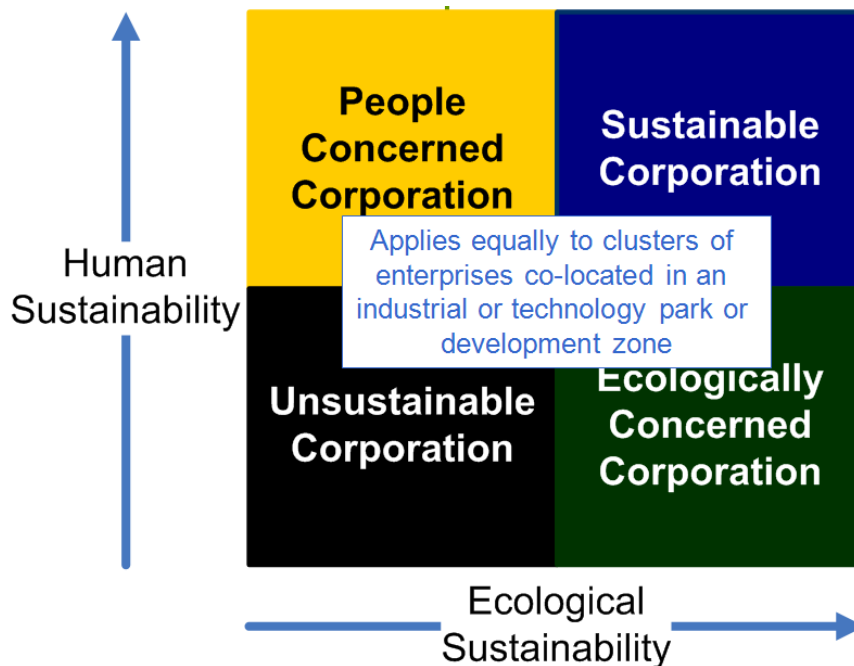
Mr. Rene Van Berkel, Chief, and Ms. Petra Schwager, Industrial Development Officer, Cleaner and Sustainable Production Unit, UNIDO

The presentation focuses on 1) the opportunities that parks offer to foster inclusive and sustainable industrial development, and 2) the impact of SITPs on different stakeholders, including enterprises, investors, national and local governments, employees, research organizations, local landowners, the local community and broader society.

Sustainability

The concept of sustainability has two meanings for firms. First, from a business perspective a *sustainable corporation* is one that employs business strategies to sustain its long-term existence, for instance, by generating acceptable returns on investment, and accessing human, natural, intellectual and social resources. On the other hand, the *sustaining corporation* contributes to the community and wider society,² by reinvesting in the community's natural, human and institutional capital, advocating sustainable development beyond private interest and responding to the global challenges of resource efficiency and climate change.

Figure 2: Phase Model for Corporate Sustainability



Source: Dunphy, D., A. Griffiths, and S. Benn. 2003

² See Dunphy, D., A. Griffiths, and S. Benn. 2003



Firms can be classified into four types according to their ecological and human sustainability; the “unsustainable corporation”, the “ecologically concerned corporation”, the “people concerned corporation”, and finally, the “sustainable corporation”, the last of which scores highly on both dimensions (see Figure 2: Phase Model for Corporate Sustainability). These categorizations apply equally to clusters of enterprises co-located in an industrial or technology park or development zone. At one extreme are firms that reject both ecological and human sustainability. But businesses can move in phases from a rejection stage to being fully sustaining and sustainable. This also applies to SITPs. Many companies approach ecological sustainability incrementally, for example by first meeting government regulations and then looking for efficiency gains and ultimately addressing consumer concerns. Such incremental approach allows for organizational learning, yet is not by definition most economical for enterprises.

UNIDO’s approach for Inclusive and Sustainable Industrial Development (ISID) is aimed at safeguarding the environment and ensuring that communities benefit from industrial development.

Eco-efficiency

Eco-efficiency is defined by the World Business Council for Sustainable Development as the “delivery of competitively priced goods and services that satisfy human needs and bring quality of life while progressively reducing ecological impacts and resource intensity throughout the life cycle to a level at least in line with the earth’s estimated carrying capacity.”³ It means minimizing waste, effluent and emissions, and protecting heritage, natural assets, aquifers, and biodiversity, as well as increasing public-service value. Corporate Social Responsibility on the other hand refers to the broader responsibility of every organization, not just private enterprises, to consider the impact on society and the environment of its decisions and activities, particularly in the following areas: organizational governance; human rights; labour practices; the environment; fair operating practices; consumer issues; and community involvement and development.

A common approach to eco-efficiency in traditional parks with traditional manufacturing areas is through the use of resource-efficient and cleaner production (RECP) methodologies. RECP is a process of continuously improving the efficient use of natural resources and the application of preventive environmental strategies to processes, products and services to increase efficiency and reduce risks to humans and the environment.

For some parks environmental sustainability and eco-innovation are part of the innovation process from day one rather than being subsequent add-ons. Eco-innovation is defined as “any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through

³ “World Business Council for Sustainable Development and Five Winds International, 2006”
<https://www.greenbiz.com/sites/default/files/document/Custom016C45F67109.pdf>



reducing impacts on the environment or achieving a more efficient and responsible use of natural resources, including energy.” (EU, 2006). Sustainability parks can be divided into four categories (see Figure 3: Four types of environmental sustainability parks , for examples):

1. RECP Champions: Like-minded industries with good individual environmental performance.
2. Industrial symbiosis: Cooperating industries that optimize resource use by reusing each others' waste.
3. Environmental technology parks: Cooperating industries involved in manufacturing of environmental goods/technologies.
4. Resource recovery park/eco-towns: Cooperating industries delivering environmental services

Figure 3: Four types of environmental sustainability parks



Type 1: RECP Champions

Cartago Industrial Park is the oldest industrial park in Costa Rica, covering 45 hectares and hosting 40 companies and 9,000 employees. The park has had an integrated solid waste management system since 2002 and seven of the key enterprises have worked together to improve shared services, such as better lighting systems, better compressed air systems and rainwater harvesting. Annual savings amount to 1.3 million kilowatt hours of energy, 100,000 tons of CO₂ and US\$283,000.

Type 2: Industrial symbiosis

Shanghai Chemical Industry Park (China) is an integrated petrochemical complex established in 1996 covering 29.4 km². Over 79 enterprises (28 in the chemical sector), and 17,000 employees are based in the park, which is also home to 128,000 people. The park has carried out cleaner production and energy efficiency audits resulting in the implementation of over 200 initiatives by 28 companies at a cost of US\$13.2 million, generating annual savings of US\$30.6 million. A utilities island built in the middle of the park serves all the companies. There is collective treatment and recycling of effluent (44,000 cubic metres a day), treatment and recovery of hazardous waste and a supply of steam and distilled water from the power station.

Type 3: Environmental technology parks

Zhenjiang Photovoltaic Park (China) is a new high-technology and innovation park established in 2010 as an integrated production base for photovoltaic (PV) solar systems. The park hosts incubators, China Construction Materials Corporation, universities and applied research institutions. Current activities include transparent conductive oxides (TCO) glass production, PV silicon wafer production and cutting, silicon mortar recovery and specialized fabrication industries.

Type 4: Resource recovery park/eco-town

Kawasaki Eco-Town (Japan) is a traditional heavy industry base where modernization has been driven by the integration of environmental service delivery to the adjacent city. The park diverts 500,000 tons of waste from landfill each year and generates over US\$130 million in economic benefit. The park recycles 70,000 tons of office archives a year into sanitary paper and 130,000 tons of plastic into industrial foam boards, blast furnace reductant and synthesis for ammonia production and alternative fuel. Further, each year 32,000 tons of organic soil and sludge and 315,000 tons of blast furnace slag are reused as alternative fuel and raw material for cement.

UNIDO's implementation strategy

In brownfield locations (sites with industrial activity), UNIDO proposes a three step approach to redevelop into a sustainability park—start-up, scale-up and consolidate. First (start up), RECP improves environmental and social performance in enterprises. It is also important at this stage to strengthen business membership organizations and facilitate collaboration and joint activities between companies. The next step (scale up) involves scaling up and replication based on an input/output (I/O) analysis (see Figure 4: UNIDO Implementation Strategy, 1), including, analysis of waste and resource streams for collective treatment and/or reuse opportunities. In the final consolidation stage, UNIDO proposes to create environmental and resource conservation infrastructure. This was the approach in Anklishvar, India, an SME cluster producing industrial chemicals such as dyestuff and pharmaceuticals. UNIDO



introduced environmentally sound technologies in enterprises and addressed common waste and emissions, resulting in the recovery of acids from waste for reuse in the production process.

UNIDO proposes a different approach for greenfield sites, taking advantage of the fact that sustainability issues should be core considerations from the outset. During the planning phase, UNIDO recommends to conduct social and environmental impact assessment and producing a master plan. After planning, the next stage is to establish the infrastructure (water, energy and effluent waste) and introduce RECP in tenant industries. The final stage is to provide support for further development, such as input/output analyses and synergies with new environmental industries (see Figure 5: UNIDO Implementation Strategy, 2).

Figure 4: UNIDO Implementation Strategy, 1

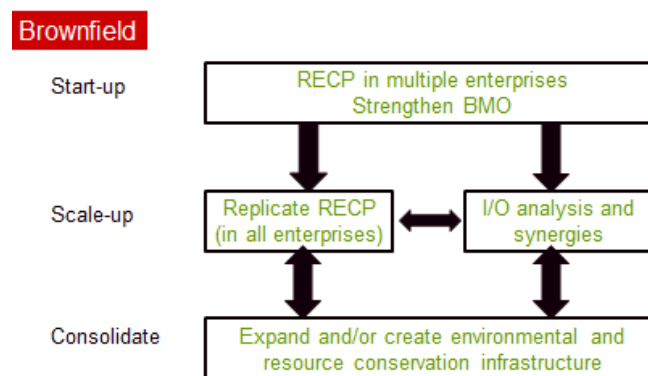
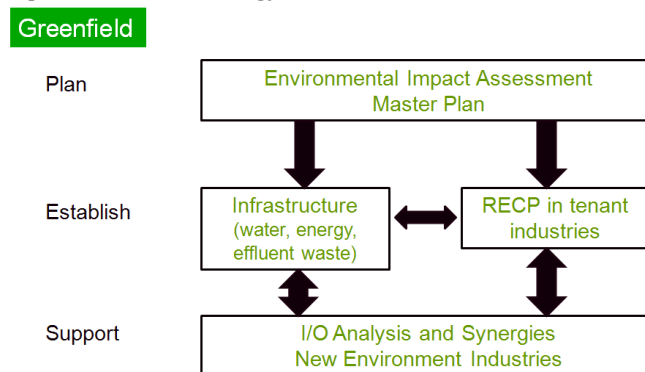


Figure 5: UNIDO Implementation Strategy, 2



Example of UNIDO experience: Pucallpa Eco Industrial Park, Peru

The use and processing of forest resources by industry in the Amazonas Region of Peru present enormous social, environmental and economic challenges for the local population and the authorities. This is the case for timber industries in the city of Pucallpa in the north-east of Peru. The local forestry industry produces different forms of pollution, mainly from sawmills located in residential areas of the city. Wood-processing companies therefore decided to create the Association of Small Businesses of Wood Processors (APEMEPD) and jointly acquired 287



hectares of land on the outskirts of Pucallpa to relocate their manufacturing plants.

UNIDO was requested to assist in the development of the site and produced a plan to set up an eco-industrial park focusing on efficient use of materials. Phase I included the planning and utilization of 88 hectares, of which 80 per cent would be dedicated to wood processing industries and 20 per cent to agro-processing and metal-working industries. The park plans to use the waste from the wood industry for wood pellet production, the first time this process has been adopted in Peru. To reduce water use, a water treatment plant will be included in the new industrial zone. Waste from the city will also be processed. The park therefore has an environmental component that benefits people living in the city. The model thus brings together the three elements of sustainability—social, environmental and economic.

5.4. Role of SITP infrastructure, integrated services and park locations

Mr. Iztok Lesjak, Director, Technology Park Ljubljana

For public policies and regional development strategies, parks are a tool for generating cooperation and collaboration between different stakeholders. Through a dynamic and innovative mix of policies, programmes, quality space and facilities, and high value-added services, they stimulate and manage the flow of knowledge and technology between universities and companies. They also facilitate communication between companies, entrepreneurs and technicians, and provide environments that enhance a culture of innovation, creativity and quality. Through incubation and spin-off mechanisms they accelerate the growth of small and medium-sized enterprises and new business creation, and foster global networks of innovative companies and research institutions across the world.

The physical infrastructure and support services are critical to a park's success and are a key determinant of its sustainability, credibility and the degree of public trust that it enjoys. They also indicate success and whether the park is growing. To provide the right mix of infrastructure, an SITP should focus both on the needs of companies and research institutions and of entrepreneurs and "knowledge workers". As a concentration of companies, start-ups, know-how, entrepreneurs, mentors, capital and scientists, the public and entrepreneurs view a park's infrastructure as office space, laboratories, networks and hubs where people can interact and work together.

Technology Park Ljubljana

From its origins as a tenant at an electronics institute, Technology Park Ljubljana (TPL) has grown into an internationally recognized business support organization. Today, the park provides business infrastructure for start-ups and entrepreneurs during the pre-incubation and incubation stages, using a model that guides companies through the various stages of their development. TPL



receives the majority of its income from leasing space, laboratories and conference facilities, thus earning money from infrastructure.

Technology Park Ljubljana was designed from the beginning to promote collaboration between regional and national centres of learning and research. The park planners located the technology park on the same site as the Ljubljana Polytechnic and the Faculty of Natural Sciences of the University of Ljubljana, as well as close to the National Institute of Biology and the university's Faculty of Biotechnology. The city ring road, airport and city centre are all easily accessible, and accommodation for researchers and students has been provided.

The park management actively nurtures innovation through collaboration with the university's research laboratories and the research institute. Support to start-ups is regarded as so important that the park helps villages around Ljubljana to install incubator services. Each village has its own business zone for attracting companies.



Mr. Iztok Lesjak presents Technology Park Ljubljana to the participants



5.5. Science, industrial and technology parks and areas of innovation

Mr. Hardy-Rudolf Schmitz, CEO, Wista Management, Germany

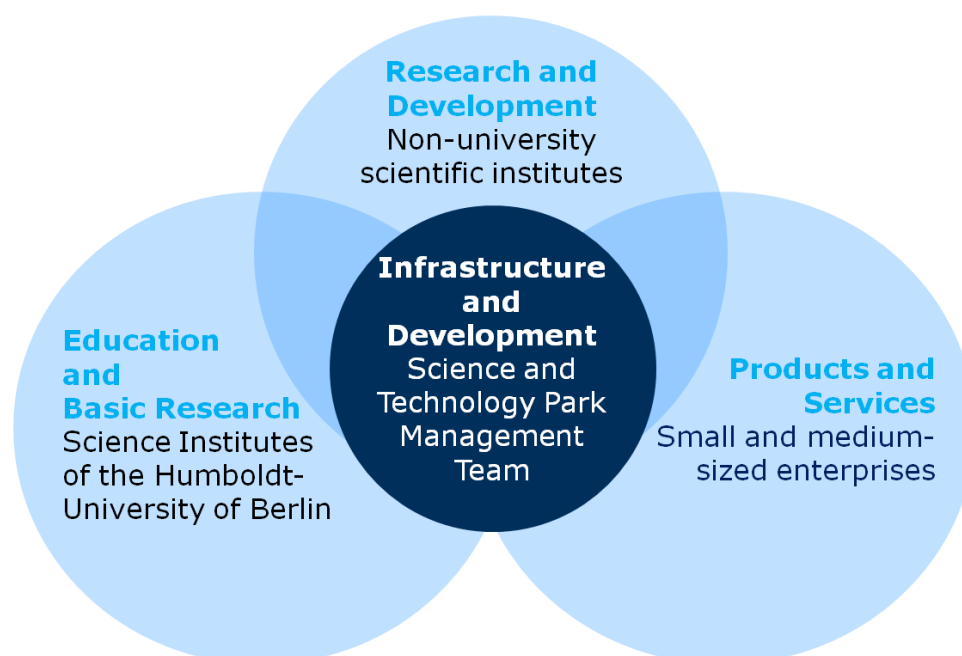
The presentation covered typologies of industrial and technology parks using examples from Berlin, Germany.

The first example is **Adlershof**, a park serving research-intensive SMEs, particularly in the areas of photonics and optics, micro-systems and materials, photovoltaic and renewable energies, IT and media, biotechnology and environment, and analytics. The park cooperates closely with research institutes, including Humboldt University in Berlin. Currently, the park hosts around 16,000 employees and 1,000 students.

By providing distinctive advantages each park is uniquely positioned to attract investors.

The park is designed in concentric circles with research institutions and companies at the core and areas for production situated on the outer rings. The density of specialized institutions guarantees close cooperation and networking between the tenants (see Figure 6: Synergies by design, Adlershof Berlin). As the tenant companies develop and grow, the park will continue to invest in infrastructure and services, to reflect the changing demands of the companies, for instance, in providing amenities that improve the quality of the working environment.

Figure 6: Synergies by design, Adlershof Berlin



Adlershof provides university graduates with the chance to set up companies and connect with the park's institutions. Start-ups are supported in the incubators for four to five years until they are ready to go into production.



Adlershof serves as a model for a planned park at the site of Berlin Tegel airport. The area encompasses 495 hectares and will focus on smart city and urban technologies. Substantial research has been conducted on local technology value chains and the park will provide facilities such as laboratories, co-working spaces and a university to encourage innovative collaboration between researchers and entrepreneurs. The park's planners hope that within 20 years the park will be as successful as Adlershof.

The second example, and the largest IT and research agglomeration in Germany, is ***Campus Charlottenburg***. The park is implementing a three-year project to encourage companies and institutions in proximity to each other to cooperate and ultimately to launch spin-off activities. A new incubation centre has contributed to regional development and created an innovative and competitive environment.

The third example, ***CleanTech Business Park Berlin-Marzahn***, was designed for firms working in clean technology production and manufacturers in areas of renewable energy. The authorities in Berlin have prioritized renewable energies as an official "future industry". The park covers a large area (90 hectares) in northeast Berlin and is located close to transport infrastructure. On completion in 2015, the park will be the largest industrial area in Berlin. The park is marketed as providing industrial working space in the vicinity of residential areas, as well as basic utilities (electricity, water and telecommunications).

One of the most important lessons from the examples of parks in Germany is the need for a clear strategy. Parks should be embedded in regional strategies and should anchor investments to attract tenants and financial resources. Through the provision of distinctive services, such as incubators, each park develops a niche position and attractiveness for investors, especially national and international venture capitalists and business angels.

Another factor contributing to the success of the parks described above is cooperation with the authorities. At the same time, independence from political influence has to be secured for the sustainability of the parks. The park management should not be a bureaucratic institution and should make its own entrepreneurial decisions.



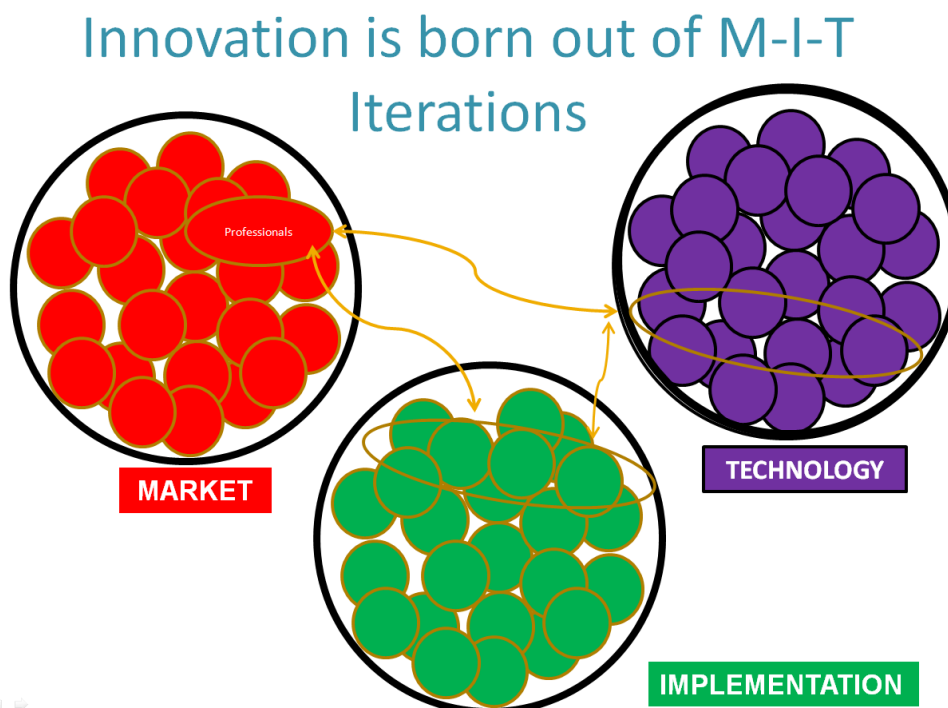
5.6. Linking SITPs with other knowledge, innovation and productive hubs

Mr. Antonio Sfiligoj, Advicorp PLC, Corporate Finance

Innovation makes economies grow faster than through inputs of investment and labour alone and is the reason why some economies are more robust over the long term than others. It diversifies the economic base by creating new companies, accelerating company growth and attracting foreign direct investment and enterprises.

However, the link between innovation and science is sometimes misunderstood. Science is often described as the driving force of economic growth, but, innovation is the key to economic growth because ideas, which need not necessarily be technological breakthroughs, become new products, services and processes.

Figure 7: Innovation out of iterations



In the past, financial resources were sufficient to create new products and services “automatically”. Innovation was essentially the task of vertically integrated companies large enough to possess the necessary skills. There was enough time to elaborate ideas thoroughly and introduce them onto the market after lengthy phases of prototype creation, industrialization and market testing. In parks, it was enough to provide infrastructure and space.

Nowadays, innovation is a messy business. How innovative companies operate today can be seen in the example of Athonet, a software company that developed an innovative way of commuting data traffic in core networks. The company was started by two engineers who found that by switching algorithms, data traffic commutation could be done by small portable servers rather than large



mainframe computers. After unsuccessfully marketing their idea to their employer (a seller of large mainframe computers), the engineers set up their own company. Initially they believed their device would ultimately replace all the mainframes used to commutate data traffic. However, they soon realized the need for a focused strategy targeting sectors where the technology would have a profound impact. This was the case, for example, in earthquake emergency response, where telecommunications networks must be set up as quickly as possible. Athonet's technology can provide this service in just one hour.

Innovation is simply bringing ideas to the market.

Athonet's story highlights the complex interactions between market, technology and implementation (see Figure 7: Innovation out of iterations). The company founders had an idea with many potential applications, but they needed external guidance to help them locate a unique use on the market for their technology. This shows that innovation is not a linear process; it can originate from the technology, from the market or from implementation, and success comes from the convergence of these aspects.

Figure 8: Customer Development Process: Steps in Company Creation and Growth

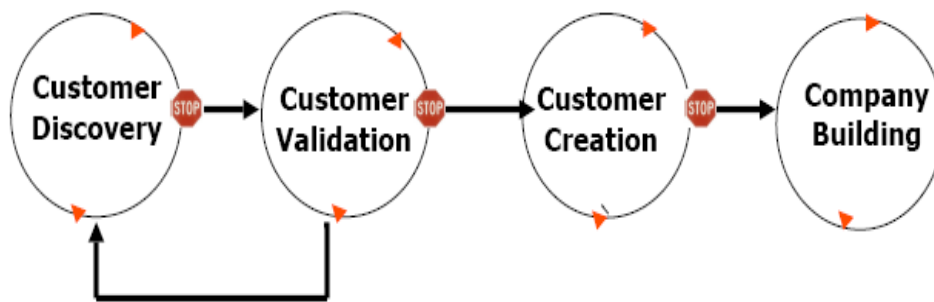


Figure 8 depicts a model of company creation and growth. The first two stages involve a repetitive process of moving back and forth between customer discovery and customer validation until the right product emerges for the right market. Start-ups can then move to the next stages of customer creation and company building. At this point in a company's development, it is difficult to attract professional investors, who prefer to engage during the growth phase, when the company's value, customers and scale-up potential are more established.

Entrepreneurial dynamics are key to understanding technology parks and incubators because companies such as Athonet generate huge value for the local economy. The traditional approach of identifying incentives and then providing these incentives through national and regional governments, tends to involve a delay in implementation, by which time the reality might have changed and entrepreneurs are offered incentives that they do not really need.

An example of effective and relevant assistance to start ups is H-Farm, a private incubator located near Venice set up to address the lack of knowledge of the software business among university graduates. It connects the best students



with entrepreneurs and becomes a majority shareholder in the companies that result. The example shows that talent, resources, entrepreneurship mentoring and regional capacity, together with a strong entrepreneurial spirit, are the ingredients of value creation. It requires a proactive body to intermediate between entrepreneurs and government, seek out companies that are key to economic diversification, and welcome entrepreneurs.

The presentation also cited the example of a technology park in Rome established by a business angel with the purpose of creating fast-growing companies. The park's location at a railway station in Rome takes advantage of fast connections to the rest of Italy. As well as the location, the park was successful thanks to an understanding by the management of investors' expectations.

It is very important for SITPs to really understand entrepreneurial dynamics. Firms need to attract private investors, which is difficult in the early stages of their development. Even at the point at which a company has already identified its customers but is not yet growing, investors will be in short supply. Therefore public grants should be available at these crucial stages. It is only when companies start to expand that they become attractive to investors. Then, the original investors and business angels can sell their shares to venture capitalists at a profit and this money, if it stays in the region, can start a virtuous cycle.

5.7. Role and relevance of SITPs in regional development strategies

Ms. Maja Bucar, Professor at the Faculty of Social Sciences, University of Ljubljana

The presentation stressed the importance of assessing local firms and the wider community when developing a regional business infrastructure strategy. The likelihood of a strategy's success increases if all stakeholders are involved in the design process from the outset. Local firms in particular need to be aware of the importance of business and innovation infrastructure, and be able to articulate their particular needs, depending on the sector and the stage of development. Poor recognition of innovation in firms stymies the emergence of a business lobby that can influence the development of strategies, policies and instruments to support innovation.



Ms. Maja Bucar

Strategies have to be based on local considerations and capacities. Experience shows that a one-size-fits-all model for parks is unlikely to succeed because it does not reflect different regional institutional structures and the expectations of what parks should deliver to the surrounding community.



Thanks to UNIDO, the OECD, the EU, and individual countries, there are plenty of examples of strategies which can serve as reference points. The tricky part is implementation. Strategies often fail because of unrealistic goals and a lack of stakeholder capacity.

A further issue familiar to many countries in Europe and Central Asia is financial sustainability, particularly of parks funded by foreign donors. The question of how parks will support themselves once the funding has dried up needs to be considered. This can also be the fault of inconsistent or rapidly changing government policies towards parks.

Innovation and entrepreneurship can be promoted and supported in the initial stages only with support infrastructures like SITPs.



6. Country Group Presentations

6.1. EU New Member States (NMS)

Croatia, Czech Republic, Hungary, Poland, Romania

Recent European Union accession countries delivered the first group of presentations: the Czech Republic, Hungary and Poland joined in 2004, Romania in 2007, and Croatia's accession in 2013 brought the number of EU members to 28.

The NMS have all backed parks as tools to stimulate economic growth and job creation, often in areas of previous heavy industrial activity with high levels of unemployment. The first SITPs emerged in the NMS during the economic upheaval of the early 1990s. In 1990, the Czech



Group one breakout session

Republic set up the Science and Technology

Parks Association and the first parks started to operate the following year. The first industrial parks in Hungary emerged in the 1990s, also as a response to the economic changes of the transition period. In Poland, the first park was set up in 1995.

The presentations showed that NMS employ a range of terminologies, regulations and systems of park oversight. Romania uses the umbrella term of transfer technology and innovation (TTI) entities, while the Czech Republic has two main categories—science and technology parks (STPs) and industrial parks (IPs). In turn, Czech STPs are sub-divided into scientific parks and centres (science, research, design, production and innovative entrepreneurship), technology parks (technology transfer and high-tech development), and entrepreneurial and innovation centres. The latter support entrepreneurs and start-ups, promote innovative technologies and cooperation between companies, and conduct seminars. Poland has over 800 business support institutions but only 40 are classified as technology parks or STPs.

Industrial parks in the NMS are required to meet certain conditions to be legally recognized. In Hungary, for instance, parks should occupy at least 10 hectares, and be host within five years to a minimum of 10 firms and 500 employees. Park



status is also a prerequisite for participation in international scientific and technological cooperation programmes.

Each country has a government agency or ministry responsible for parks, though in some cases, the complexity of the regulatory and administrative system undermines overall policy cohesion towards parks. Such is the case in Romania where parks are regulated by different mutually inconsistent laws and come under the responsibility of several ministries. In the Czech Republic, parks also work with multiple government agencies and ministries, but are well integrated at the local level with municipal authorities, universities, the academy of science, R&D organizations, and the public and private sectors. In Hungary, the Industrial Park Council within the Ministry of National Economy is responsible for monitoring the status, development and evaluation of industrial parks. The Council facilitates networking, clustering and communication between parks through an online platform, available in Hungarian and English.

The presentations stressed that parks and related infrastructure should be integral to innovation policies at the national and regional levels, based on a long-term strategic approach supported by appropriate financial instruments. Complex regulatory and administrative structures, as highlighted by the presentation on Romania, can undermine such policies and financial instruments. The responsibilities of different ministries, departments and agencies towards parks should thus be clearly defined.

Two member states which acceded to the EU most recently, Romania and Croatia, also have innovation support infrastructure policies and national bodies to implement them. The Business Innovation Agency of the Republic of Croatia (BICRO) has programmes to support innovation, to foster cooperation between science and industry and to attract venture capital. Croatia's Technology Infrastructure Development Programme targets specialized scientific and incubation centres for innovative companies. Croatia also provides funds for researchers in public and private institutions to develop innovative products and services, targeting those with high market potential. In terms of national strategies, Romania's *Vision 2020* and *National Research, Development and Innovation Strategy* both emphasise partnerships between public R&D institutions and universities, and the business sector <punctuation correct?>. The strategy also foresees infrastructure connected to existing and emerging clusters of parks and technology development areas.

Having established themselves in NMS as part of national innovation and competitiveness strategies, parks are entering a new phase of consolidation. The rapid expansion of parks in the 1990s and 2000s, spurred in part by EU structural funds, is over and many parks in the NMS are facing fierce competition for funding and tenants. In Hungary, where the economic crisis is blamed for over half of the country's 179 parks failing to comply with required standards and conditions, the network of parks is regarded as having reached an

The key to a successful STP is local conditions; connections with universities, research groups and skilled people.



appropriate level and territorial distribution. In the case of the Czech Republic, many STPs are struggling due to a failure to conduct realistic demand analysis and to market parks to firms and investors effectively. As with Hungary, in the Czech Republic there are no plans for any new parks beyond those already under construction. Instead, investment will focus on improving existing parks.

Many STPs are well served with infrastructure and facilities, but the quality of services lags behind. In Poland, the goal is for parks to match standards of international best practice. NMS have also acknowledged that parks need to improve management, service delivery and marketing. The Hungarian government is keen to maintain the status of IPs as attractive locations for firms, through modernization of infrastructure and service delivery. The approach also aims at improving cooperation between sectors of production, R&D and innovation. A new designation—science and technology park—was introduced in 2013 to encourage investment and the development of companies, including start-ups, focusing on knowledge-intensive technology innovation.

6.2. South East Europe (SEE)

Albania, FYR Macedonia, Montenegro, Serbia and Turkey

The conference heard from transition countries in the early stages of SITP policy development and implementation. As in the other group presentations, governments envisage parks as tools to support strategies to strengthen competitiveness, job creation, R&D, innovation and technology transfer. Most countries have plans to set up parks and want to learn from successful cases in other countries. Within the group, Turkey is the exception with an established network of industrial parks. Examples of successful parks in Turkey could serve as valuable best practice models for other countries, particularly in promoting interaction between researchers and business, and in start-up incubation.

The presentations outlined legal frameworks and various development strategies relating to parks. Most strategies refer to parks' role in supporting innovation and scientific activities, and the uptake and development of new technologies. In Albania, the *Business Innovation and Technology Strategic Programme for SMEs for 2011-2016* foresees the use of incubators and clusters to help firms develop, adopt and commercialize technology. Montenegro's *Strategy for Scientific Research Activities (2008-2016)* and *Governmental Strategy for the Development of SMEs (2011-2015)* emphasise scientific and research activities as a basis for economic development. Serbia's national strategies focus on creating a business-enabling environment (simplifying administrative procedures and



Mr. Darko Petrusic, Deputy Minister of Science, Montenegro



modernizing legal frameworks), industrial restructuring and innovation, and attracting FDI.

Turkey is the group's leader, with over 50 technology parks hosting 2,500 companies and 27,000 employees. FYR Macedonia has three operating technological industrial development zones (TIDZs) and a further 12 planned in the areas of production, IT, R&D and services related to the import of goods. In Albania, where eight industrial parks are at the approval stage, the legal framework is in place for economic zones, with special arrangements in terms of customs and fiscal issues. Serbia is in the process of developing its strategic, financial, legal and institutional frameworks to raise national and regional competitiveness. Serbia demonstrated a strong wish for advice and assistance in developing its strategies for parks. As in other SEE countries, Serbia sees parks as a tool to link universities and industry, to support start-ups and early stage investments, accelerate SME growth and attract FDI. However, this intention has yet to translate into a concrete policy or strategy. Moreover, park specialization and the expectations of various stakeholders, such as industry, firms, academia, local authorities, employees, private investors and other members of civil society, still have to be developed with strategic guidelines based on regional specialization.

Montenegro also has a plan to establish parks, and the country's first science and technology park is specifically designed to bridge the gap between academia and the business sector, promote entrepreneurship and support start-ups. The government is implementing a regional approach with a network structure in four cities. The headquarters in Podgorica will be supplemented by three decentralized "Impulse Centres", each with a different focus (energy efficiency, agriculture, wood processing, food and beverage technology, etc.).

As the most developed in terms of industrial parks, other countries can learn from best practice in Turkey. Parks in Turkey offer a range of incentives to tenant companies, such as exemptions from corporate and income tax. The largest park in Turkey is the Technology Park ODTÜ Teknokent in Ankara. The park supports entrepreneurs and enterprises at every stage of their development with programmes and mentoring, including pre-incubation and business modelling, business acceleration programmes and marketing strategies to attract venture capital. In terms of funding, start-ups are supported by a network of business angels. Companies collaborate with universities and industry at the national and international level. Indeed, the park recognizes the importance of connecting business with academia and a precondition of working in the park is that researchers must have at least one R&D project. An additional aspect of Technology Park ODTÜ Teknokent is the provision of leisure facilities, such as restaurants, sports facilities, a hospital, libraries and other amenities.

*Technology Park
ODTÜ Teknokent
supports enterprises
at every stage of
their development.*



6.3. Eastern Europe and Central Asia

Belarus, Kazakhstan, Moldova, Ukraine, Eurasian Economic Commission

The third group presented four countries with diverse economic structures and levels of business infrastructure. Some countries, such as Belarus, have well-developed institutional and administrative frameworks for SITPs, while in others, such as Moldova, the implementation of strategies and policies has yet to make an impact. The countries share ambitious plans for economic diversification and high-technology sectors facilitated by networks of SITPs and special economic zones. Each country differs in its ability to implement policies and to access the necessary expertise and finance to develop business infrastructure.

In addition to the country presentations, the Eurasian Economic Commission (EEC), a regional integration body founded by Belarus, the Russian Federation, and Kazakhstan, provided the perspective of a supra-national organization overseeing the establishment of a single economic zone among its member states.

The four countries regard a high quality business environment as vital for economic development, and parks feature prominently in national and local development strategies aimed at a range of industrial sectors. Ukraine has seven parks located across the country specializing in areas such as forestry, engineering, automobiles and light industry.

Parks in Belarus (see Figure 9: Technology Parks in Belarus for a map showing the location of industrial parks in the country) provide a wide range of services to tenant firms, and stress the value of knowledge circulation. They assist in technology transfer, conduct national and international market research on business opportunities, and disseminate knowledge and research among tenant firms. Additionally, many parks provide support for the protection of intellectual rights and patent issues. Parks have an important role in simplifying the process of doing business, for example, in reducing the time needed to connect to basic utilities, such as electricity, and streamlining the issuing of construction permits. In Moldova, parks operate in sectoral clusters, such as fruit processing, electronics, furniture, information and communications technology, and building materials.

The presentations also summarized the expectations of different stakeholders. Governments hope that parks will rejuvenate economically depressed areas, create jobs, lead to economic diversification and boost the competitiveness of

Figure 9: Technology Parks in Belarus





national and local industries. Investors try to secure industrial land at reduced or subsidized cost. Research institutions are interested in enhancing cooperation with industry and creating knowledge hubs and clusters in related sectors.

Kazakhstan is relatively new to SITP development, but already has 10 industrial zones, including one in Astana, where an industrial park has been established within a larger special economic zone, Astana New City. Although industrial parks and zones are at the beginning of their development, the government recognizes their role in supporting the development of private entrepreneurship, industrial development, job creation, and investment promotion. The *State Programme of Accelerated Industrial-innovative Country Development for 2010-2014* targets sustainable and balanced economic growth through diversification and competitiveness, identifying priority economic sectors, including traditional industries (the oil and gas sector, the mining and smelting industry, the chemical and atomic industry) and new sectors (information and communication technologies, the space industry and renewable energy).

Industrial parks are also a means to strengthen cooperation and collaboration with other countries. The Moldovan Investment and Export Promotion Organization (MIEPO) has agreements with China and the Russian Federation to exchange knowledge and best practice. Likewise, Belarus is cooperating with China to establish a joint industrial park that will comprise industrial and transportation facilities, residential areas, social facilities, financial support and research institutions.

The presentations mentioned weak implementation of development strategies. This is true in Moldova where the 2010 law on industrial parks specifies the establishment of a special agency to promote national investment projects. To date, however, this agency has not been established. Other issues related to industrial parks include an opaque selection process and procedures for tenants. The transfer of public assets and the monitoring and evaluation of investment projects also draw criticism. The challenge is to strengthen linkages between parks and universities and build stakeholder networks. For instance, in Moldova, a minority of parks cooperate with universities. The Government plans to allow parks on brownfield sites and to simplify administrative processes.

In Kazakhstan logistical aspects relating to the regulation and establishment of parks and their activities are still under development. The existing legislation does not fully address these aspects, undermining the cohesive and strategic development of industrial parks at the national and local level. Belarus is also enhancing the legal framework that supports the national innovation infrastructure, and its monitoring and evaluation mechanisms for industrial parks need to be strengthened.

Regional integration organizations are active in promoting innovation and special economic parks and zones. The EEC is the regulatory body of the Customs Union (CU) and Single Economic Space (SES) of Belarus, Kazakhstan and the Russian Federation. The EEC promotes freedom of movement for goods, services, labour and capital in member states. In 2014, a draft treaty on creating a



common economic space will be finalized, covering five countries (EEC members plus Armenia and the Kyrgyz Republic), including provisions on common industrial policy guidelines and cooperation through technological platforms and industrial clusters within the EEC.

To support innovation, commercialization and the application of new technologies and management solutions, the EEC promotes interaction between member states on economic zones, industrial clusters, technological platforms and other types of innovation infrastructure. Innovation is regarded as an integral part of industrial policy and the EEC is planning a Common Innovative (CI) space to foster industrial development and cooperation between member states. The CI plan will address the current lack of a unified park classification and information system, and establish a system of technology and industrial parks evaluation, and a single information and communication platform.



7. The way forward

The regional conferences are platforms for organizations and institutions from the region to share knowledge and experience, and to identify common challenges and opportunities for the development of different types of parks, to be consolidated in an action plan for technical assistance on the part of UNIDO.

During the Second Regional Conference, the three country groups discussed their experiences of science, industrial and technology parks, and produced a list of recommendations for countries and park planners. The participants also highlighted areas of demand for UNIDO services. During the final session these recommendations were summarized and presented to the audience.

7.1. Recommendations

For governments when developing strategies for SITPs:

1. Ensure coherence between regional, national and international strategies.
2. Identify and link existing industry and research competences through regional development and innovation strategies.
3. Ensure that measures for development are consistent with regional, national and European development strategies. It is also important to move towards greater coherence between strategies and funding mechanisms through enhanced information sharing.
4. Conduct country and regional studies to analyse the best use of available resources. Concentrate structural funds (and more generally all public-sector funding) in a few strong initiatives rather than distribute them widely over several projects. For instance, allocate funds to one project and make the findings available to all stakeholders. Optimize communication between the multiple actors involved in structural funds, to ensure common objectives, coherence and synergy.
5. Identify clusters of companies working in related sectors, and encourage external companies, especially in high-tech niches, to locate in the vicinity.
6. Give preference to parks located on brownfield sites. In terms of public-private partnerships, it is unlikely that the private sector will invest in brownfield sites where there is a high risk.
7. Use parks as instruments to further the process of greening economies.
8. Include knowledge hubs, such as universities, in the formulation of regional, national or international research and innovation strategies.
9. Encourage aggregation, consolidation and specialization of parks in regions where there is a proliferation of parks or the status of parks has been devalued due to poor performance.
10. Take measures to enhance the performance of existing parks instead of building new parks. Engage specialists with proven track records in improving parks to assist poorly performing parks.

Capacity-building:



1. Instigate nationwide policies to create innovative societies; reform education systems, promote creativity and foster management and entrepreneurship skills in schools.
2. Identify and address any shortages of core managerial skills and technology transfer between innovative companies and entrepreneurs, academia and research institutions. Research is often conducted with little economic or commercial application. The challenge is to transform a good researcher into a good entrepreneur.
3. Enhance decision-making skills at the government level.

Operational issues related to planning and management of SITPs:

1. Support a common understanding of what SITPs are: some distinctions are not necessary and mask overlap in activities.
2. Ensure coordination at the regional level to minimize duplication of activities. Enhance communication between stakeholders to limit conflict. Engage the services of a third party to monitor cooperation and suggest ways to enhance complementarity.
3. Encourage the public sector to take responsibility for regenerating brownfield sites and encouraging private-sector engagement and partnerships. Some of this work could be linked to targets established under international agreements for energy efficiency and environmental remediation.
4. Integrate SITPs with surrounding innovation systems and explore the role of SITPs as knowledge hubs providing educational curricula for the drivers of innovation. Locate business incubators on, or close to, university campuses. If a park is isolated from universities or other research institutions, developers will have to invest in laboratories and other infrastructure necessary to attract tenants.
5. Provide long-term leases of land for parks to attract investors.
6. Conduct feasibility studies to identify the demand for a park, as well as the services and facilities that the park would need to offer as incentives to attract tenants.
7. Undertake promotion and outreach activities for the park.
8. Require that firms applying to be in a park submit a business plan explaining their motivation.
9. Tailor incentives offered to companies to locate to an SITP according to the industrial sectors you wish to attract. Certain types of incentives appeal to different companies. Exemptions from customs are attractive for manufacturers but not so relevant for firms engaged in research and development.
10. Encourage active members of the parks to be mentors to entrepreneurs, start-ups and graduates.
11. Model Technology Transfer Services, in particular high value-added services, from developed ecosystems to developing ones. Diffuse the concept of Technology Readiness Level.⁴ Some parks need help to develop

⁴ Technology Readiness Level (TRL) is an indicator of the degree of development of a technology towards deployment on a scale of 1-9, with 9 being fully deployment ready. See Brookhaven National Laboratory Office of Technology Commercialization and Partnerships, "Technology



technology transfer services, to valorize their research results, incubate start-ups and transfer results to the international community.

12. Align individual incentives with organizational objectives. For instance, professors are incentivized to publish papers but not to bring innovations to industry.



Mr. Victor Burunsus, Consultant, Moldovan Investment and Export Promotion Organization

Exchange of experiences, best practice and information

1. Build a platform to exchange experiences that includes countries and regions from around the world (Asia and North America, etc). Make knowledge accessible and useable through the platform so it can be applied in different contexts. Best practice has to be recorded and made available to all.
2. Highlight pilot cases as beacons of excellence to serve as models for others to follow. Transparency can improve understanding and coherence, reduce corruption, monitor results and help identify best practice. Include in the platform a focus on specific SITP issues, such as the environment, communities, multi-stakeholder governance (business, local community and academia), links to innovation policies and systems, and business incubators.
3. Encourage and incentivize cooperation between actors, regionally, nationally and internationally. Conduct networking activities in parallel with other countries, and learn from best practices.
4. Conduct more strategic planning collectively on a global basis and make this available for local contextualization and application. Involve policymakers from the outset in these activities and use the results effectively in policymaking and implementation.
5. Improve methods of measuring the impact of parks.



7.2. Areas of potential UNIDO assistance

- Drive the remediation phase of brownfield development through the use of public funds (from regional, national or international organizations).
- Assist in mapping exercises of industrial clusters which could feed into strategies related to smart specialization and business-related infrastructure.
- Encourage requests from countries to trigger UNIDO interventions and to mobilize resources.
- Assist in conducting an assessment of the best location for a model park, which would serve as an example to investors.
- Assist in developing coherent roadmaps, including R&D infrastructure, at the global and local levels.
- Promote SITPs as a tool to governments, particularly where there is still a lack of knowledge in this field.
- Suggest mechanisms to facilitate information sharing.
- Enhance the visibility of UNIDO activities in fostering ISID and economic growth through SITPs. Promote UNIDO's entrepreneurship development programmes and promotional activities. Provide training in innovation and entrepreneurship
- Assist in funds mobilization. There are many areas where UNIDO can help— entrepreneurship, cleaner production, resource efficiency, etc. In terms of funding UNIDO can take up countries' proposals for action and enter into dialogue with partners. UNIDO needs countries' support for joint mobilization. UNIDO's new partnership unit raises the possibility of cooperation with IFIs. UNIDO can act as a facilitator of dialogue with international financial institutions.
- Create a platform to monitor best practice in high-performing SITPs. This platform could be a medium to share knowledge to make sure best practice is followed and poor performing IPs are encouraged to improve. Identify experts with a proven track record of managing successful SITPs whose experience can help underperforming parks.
- Monitor services through the platform that companies find most useful and provide feedback to existing parks. Chart best practice in IP management globally (in universities, government research centres and private companies) and make it available.

7.3. Recommendations for the next regional conference:

- Invite SITP experts at the next regional conference to participate in "clinics" on examples of best practice and organize intensive one-to-one consultations.
- Arrange webinars involving SITP experts. Examples of best practice are Sweden, Italy, Turkey and Finland. UNIDO's role would be as a facilitator of dialogue.
- Encourage peer-to-peer communication between parks. For example countries can be connected via webinars and UNIDO can clarify questions and introduce countries to examples of good practice around the world.



8. Speakers

(in alphabetical order)

Maja Bučar

Vice Dean for Research and Doctoral Studies, Faculty of Social Sciences, University of Ljubljana



Professor Bučar has broad experience in the field of SITPs, and has actively participated in developing innovation-oriented policies for economies in EU new member states, as well as in the development of an SITP in Bosnia and Herzegovina. She has been involved in a variety of research projects, among others funded by the EU FP 6 and 7 (e.g. Citizens and Governance in a Knowledge-Based Society, Analysis of Governance and Innovation in the EU New Member States) and has participated in various conferences on R&D and innovation policy in South East Europe.

Iztok Lesjak

Director, Technology Park Ljubljana



Iztok Lesjak, M.Sc. is an international expert in innovative SME creation, incubation and regional policy development. He obtained an M.Sc. degree in economics while his B.Sc. degree is in computer science, both from the University of Ljubljana.

Between 1989 and 1992 Mr. Lesjak was involved in marketing research results and capabilities in the Italian market as a representative for the Jozef Stefan Institute and the National Institute of Chemistry. From 1993 to 1995 he worked as a project manager for the Technology Park at the Jozef Stefan Institute, the predecessor of the Technology Park Ljubljana, where he was appointed General Manager in 1996.

Mr. Lesjak has supported the design, development and implementation of the park infrastructure and value-added services. He was actively involved in the evaluation process for more than 200 initiatives and hi-tech company proposals. He is also an international projects expert in the fields of national and regional innovation and/or technology transfer strategies and regional development. He is also a senior lecturer of business planning at the University of Nova Gorica.

Mr. Lesjak was the initiator of the National Association of Technology Parks, Business Incubators and Technology Centres and was president of this association from 2005 to 2008. He was president of the European Division of the International Association of Science Parks from 2010 to 2012.



Olga Memedovic
Chief, Europe and Central Asia Bureau, UNIDO



Ms. Memedovic is project manager for the UNIDO Industrial Parks programme. Before joining UNIDO, she served as a project leader at the Netherlands Economic Institute and as a research fellow at the Tinbergen Institute of Erasmus University Rotterdam, Free University Amsterdam and University of Amsterdam.

Ms. Memedovic has led various research projects, among which are the EU-LDC Trade and Capital Relations; Global Value Chains and Innovation Networks: Prospects for Industrial Upgrading in Developing Countries; Public Goods for Economic Development; and Pursuing Resource Efficiency in Europe and Central Asia. She is the author and main editor of several books, reports and studies on the issues of the globalization of labour markets, multilateralism and regionalism, technical barriers to trade, theory and measurement of comparative advantages, global value chains and production networks, industrial energy efficiency, resource efficiency, SME clusters, industrial parks and innovation systems, collective action and industrial policy, eco-industrial policy, and others.

Hardy Rudolf Schmitz
CEO, Wista Management



Hardy Rudolf Schmitz is an electrical engineer. Following postgraduate studies in economics, he worked with BCG and Digital Equipment GmbH. In 1989 Mr. Schmitz founded a company within the CompuNet Computer Group, later sold to the GE Capital group. Hardy Schmitz is a business angel and member of several advisory boards. Since March 2002 he has served as CEO of Wista Management GmbH which runs the STP Berlin Adlershof. During this time Hardy Schmitz initiated key projects in Berlin, including the planning of the area of the former Tempelhof Airport and the foundation of Tegel Projekt GmbH, designated to become a Centre for Urban Technologies after the closure of the airport.

Petra Schwager
Industrial Development Officer, Cleaner Production Unit, UNIDO



Ms. Schwager has long experience as a UNIDO project manager and contributed to building up the UNIDO/UNEP global Cleaner Production Programme. She has managed National Cleaner Production Centres and Programmes in more than 15 countries in Africa, Asia, Central and Eastern Europe, and Latin America; developed UNIDO's Regional Cleaner Production Networks for Latin America and South-Eastern Europe; and coordinated an integrated municipal waste management project in Cuba and several low carbon



projects. Since 2013, she has been coordinating UNIDO's technical assistance to the Government of Peru on the establishment of eco-industrial parks.

Antonio Sfiligoj

Innovation Adviser, Advicorp PLC, Corporate Finance



Mr. Sfiligoj is an expert on technology-based companies and start-ups. He holds an M.Sc. in electronics engineering from the University of Trieste and is an expert in market analysis, strategy and business development at technology-based firms. He advises companies in dealing and negotiating with professional venture capitalists and strategic investors (biomedical devices, IT, semiconductors, nanotechnologies, renewable energies, and engineering). He is Senior Adviser, Innovation with Advicorp PLC as a result of which he is deemed an "approved person" by the UK's Financial Services Authority (FSA). He is a board member and acting CEO of innovative companies, including VivaBioCell Spa, a tissue engineering and regenerative medicine company based in Udine, Italy.

As chief executive of BIC – Business Innovation Centre FVG, an "EU best practice" business incubator, he has contributed to launching and mentoring some 30 new innovative ventures. He is a co-founder of IAG (Italian Angels for Growth), the leading Italian business angels' group.

He has been Programme Manager for the Innovation and Technology Management Group at Battelle Geneva (a subsidiary of Battelle Columbus, Ohio, USA) and researcher and then marketing manager at Zeltron (Contract R&D of Electrolux/Zanussi). As CEO of Sviluppo Italia FVG, a branch of the Italian Agency for Foreign Direct Investment and Enterprise Development, he gained direct experience of providing start-up assistance for the establishment of technology parks and incubators in Eastern Europe. Among others, he has provided technical assistance on institution and capacity-building to the national innovation and small business agencies of Slovenia (now "SpiritSlovenija") and Croatia (BICRO) as well as to science and technology parks (Technology Park Ljubljana), incubators (in Italy, Slovenia, Croatia, Tunisia) and hi-tech clusters (RC-IKT Kranj). These technical assistance projects were funded by the EU, UNIDO and the World Bank.

Nilgün Taş

Chief and Deputy to the Director, Competitiveness, Business Environment and Upgrading Unit, Business, Investment and Technology Services Branch, UNIDO



Ms. Nilgün Taş is a private-sector development specialist, with over 28 years of experience in economic development in developing and transition economies, including in her native Turkey. She is a resource person on business environment reforms, industrial upgrading and institutional capacity-building in UNIDO. Nilgün Taş is currently serving as the Chief



and Deputy to the Director of the Competitiveness, Business Environment and Industrial Upgrading Unit in the Business, Investment and Technology Branch at UNIDO Headquarters in Vienna and as the Chair of UNIDO's Gender Mainstreaming Steering Committee. Ms. Taş was the UNIDO Representative in Viet Nam from 2007 to 2010 and received the Friendship Medal, the country's highest honour, awarded by the President of Viet Nam, for her contributions to the overall economic development of the country.

Before 2007, Nilgün Taş was a freelance consultant and advised governments and private-sector institutions in Viet Nam, Laos, Cambodia, Sri Lanka, Kyrgyzstan, Kazakhstan, Uzbekistan, Turkmenistan, Azerbaijan, Georgia, Moldova, Ireland, Eritrea, Tanzania and Zanzibar, and the West Bank and Gaza, among others, on behalf of UNIDO, the OECD, TICA and UNDP.

Ms. Taş contributed significantly to setting up the Small and Medium Industry Development Administration, the Credit Guarantee Fund Company, the Turkish International Cooperation Agency, the Small Industry Development Organization, and the Foundry Development Center in Turkey and held senior management positions at these institutions as Vice President, Director of the Board, Programs and Projects Coordinator, Technical Department Manager and Deputy Manager, respectively, in the 1980s and 1990s. She is also among the founding members of the OECD Tax Training Center in Ankara and the OECD Center for Private Sector Development in Istanbul. She has published articles on various topics and was awarded the George Hay Brown Marketing Scholar of the Year in 1992 by the American Marketing Association for her contributions to research at the Midwest Agribusiness Trade Research and Information Center in Iowa. Ms. Taş holds undergraduate and graduate degrees in materials and metallurgical engineering from the Middle East Technical University, Ankara, Turkey and earned an MBA from the Iowa State University, USA.

Stephen Taylor

Director Technology Transfer Department, AREA Science Park, Trieste



Mr. Taylor has 20 years of experience in helping major firms and government agencies in Europe and North America in accessing the latest knowledge and expertise for analysis and planning for new business, market research, new product development and technology commercialization. He has helped companies in assimilating new technology developments and translating them into business opportunities, and worked with key players in the sectors of aerospace and defence, information technology, telecommunications, energy, automobiles, electronics, engineering, chemicals and pharmaceuticals. Mr. Taylor is also active in joint-venture negotiations, industry and competition monitoring and analysis, business and new-product-opportunity evaluation, forecasting, technology and economic analysis.



Rene Van Berkel
Chief, Cleaner Production Unit, UNIDO



Mr. Van Berkel leads UNIDO's contribution to the joint global programme with United Nations Environment Programme (UNEP) on Resource Efficient and Cleaner Production (RECP) in developing and transition economies. He also guides UNIDO's input into the Climate Technology Centre and Network, and manages projects in the areas of Eco-Industrial Parks, Corporate Social Responsibility and sustainable value chain development. Before joining UNIDO, Mr Van Berkel worked as an independent consultant in eco-efficiency, industrial ecology and sustainable technology for several United Nations agencies, CSIRO Minerals (Australia) and the National Institute for Environmental Studies (Japan). He has written over 200 publications covering different aspects and applications of cleaner production, industrial ecology, environmental technology development and sustainability management.



9. References

Brookhaven National Laboratory Office of Technology Commercialization and Partnerships, "Technology Readiness Levels Definitions and Descriptions," [accessed 1 May 2014] Available from <http://www.bnl.gov/techtransfer/docs/Technology-Readiness-Levels-Definitions-and-Descriptions.pdf>.

Dunphy, D., A. Griffiths, and S. Benn, *Organisational Change for Corporate Sustainability*. 2003, London, UK: Routledge.

EU. 2006. Competitiveness and Innovation Framework (2007 to 2013). Official Journal of the European Union (9/11/06)

Opinion of the European Economic and Social Committee on 'European Technology, Industrial and Science Parks in the crisis management, preparation of the after-crisis and post-Lisbon strategy period' (2011/C44/22), *Official Journal of the European Union*, 11 February 2011, para. 3.4.

World Business Council for Sustainable Development and Five Winds International (2006). *Eco-efficiency Learning Module*. Available from <https://www.greenbiz.com/sites/default/files/document/Custom016C45F67109.pdf>

Annex

I. Conference Programme

Programme Overview	
DAY ONE	
09:00-10:00	Registration
10:00-10:30	Opening ceremony Address by the State Secretary, Deputy Minister of Economic Development and Technology of Slovenia Address by the UNIDO Director General Introductory presentation to the Conference (Ms. Olga Memedovic, UNIDO)
10:30-11:15	Introductory speeches Mr. Stephen Taylor (AREA Science Park, Trieste): <i>Designing programmes and policies for SITP development</i> Ms. Nilgun Tas (UNIDO): <i>Parks best practice and UNIDO assistance</i> Mr. Rene Van Berkel and Ms. Petra Schwager (UNIDO): <i>(Eco-) Industrial parks</i>
11:15-11:30	Coffee break
11:30-11:50	<i>Role of SITP infrastructure, integrated services and park locations</i> Mr. Iztok Lesjak (Technology Park Ljubljana)
11:50-13:00	Country Presentations 1 on current status and national experiences in developing SITPs - EU New Member States: Croatia, Czech Republic, Hungary, Poland, Romania <i>Followed by questions and answers session chaired by Mr. Stephen Taylor</i>
13:00-14:30	Lunch
14:30-14:50	<i>Science, industrial and technology parks and areas of innovation</i> Mr. Hardy Rudolf Schmitz (Wista Management)
14:50-16:00	Country Presentations 2 on current status and national experiences in developing SITPs - South East Europe: Albania, FYR Macedonia, Montenegro, Serbia, Turkey <i>Followed by questions and answers session chaired by Mr. Iztok Lesjak</i>
16:00-16:15	Coffee break
16:15-16:35	<i>Linking SITPs with other knowledge, innovation and productive hubs</i> Mr. Antonio Sfiligoj (AdviCorp PLC, Corporate Finance)
16:35-17:45	Country Presentations 3 on current status and national experiences in developing SITPs - Eastern Europe and Central Asia: Belarus, Kazakhstan, Moldova, Ukraine, Eurasian Economic Commission <i>Followed by questions and answers session chaired by Mr. Antonio Sfiligoj</i>



17:45-18:30	Day One wrap-up session
19:00	Dinner
DAY TWO	
09:10-09:30	<i>Role and relevance of SITPs in regional development strategy</i> Ms. Maja Bučar (University of Ljubljana)
09:30-11:00	Break out group sessions Groups by sub-region
11:00-11:15	Coffee break
11:15-13:00	Closing session Presentations by sub-groups and discussion of the regional programme of activities document Closing statements and wrap-up of conference
13:00-14:30	Lunch
14:30-18:00	Site Visits Technology Park Ljubljana http://www.tp-lj.si/en Iskra Tel http://www.iskratel.com/en RC IKT http://www.rcikt.com/?lang=en Akrapovič http://www.akrapovic.com/



II. List of Participants

Country	Name	Organization	Position
Albania	Ms. Brunilda Paskali	Ministry of Economic Development, Trade and Entrepreneurship	Deputy Minister
Belarus	Mr. Petr Baltrukovic	State Committee on Science and Technology of the Republic of Belarus	Deputy Chair
Croatia	Mr. Andrija Petrovic	Technology Park Varazdin	General Manager
Czech Republic	Ms. Jaroslava Kasparova	Ministry of Industry and Trade	Officer in the Department of Innovative Entrepreneurship and Investments
Germany	Mr. Hardy-Rudolf Schmitz	Wista Management	CEO
Hungary	Mr. Attila Juhasz	Permanent Mission of Hungary to the United Nations Office and Other International Organizations in Vienna	Third Secretary
Italy	Mr. Antonio Sfiligoj	AdviCorp PLC, Corporate Finance	Innovator accelerating enterprise creation and growth
Kazakhstan	Ms. Gulzhakhan Assanova	Regional Policy Department, Ministry of Regional Development,	Senior Expert
Macedonia, FYR	Ms. Nikolina Stojanovska	Directorate for Technological Industrial Development Zones	Head of Aftercare Unit
Republic of Moldova	Mr. Victor Burunsus	Moldovan Investment and Export Promotion Organization (MIEPO)	Consultant, International Development
Montenegro	Mr. Darko Petrušić	Ministry of Science	Deputy Minister
Poland	Ms. Berenika Marciniak	Department of Modern Economy Infrastructure, Polish Agency for Enterprise Development	Deputy Director
Romania	Ms. Ileana Gabriela Nitu	Ministry of National Education - Intermediate Body for Research	Counsellor
Romania	Ms. Monica Gabriela Turcan	Ministry of National Education - Intermediate Body for Research	Counsellor
Serbia	Ms. Jelena Spasic	Ministry of Regional Development and Local Self Government	Assistant Minister
Slovenia	Mr. Iztok Lesjak	Technology Park Ljubljana	Director
Slovenia	Ms. Kristina Ober	Technology Park Ljubljana	PR and Marketing, Project leader
Slovenia	Ms. Tanja Kožuh	Primorski Tehnološki Park	CEO
Slovenia	Ms. Vesna Nahtigal	Institute of Metals and Technology	Business Development Manager
Slovenia	Mr. Dusan Busen	Automotive Cluster of Slovenia (ACS)	Director
Slovenia	Ms. Maja Bucar	University of Ljubljana	Vice Dean for research and doctoral studies, Faculty of Social Sciences
Slovenia	Mr. Mirko Lesnjak	Liveo	CP consultant – Eastern and Central Europe
Slovenia	Mr. Bostjan Bozic	Vekton	Executive Manager of Construction Projects



Slovenia	Ms. Mia Gostincar	Vekton	Marketing and PR Manager
Slovenia	Mr. Janez Podobnik	International Center for Promotion of Enterprises	Acting Director General
Slovenia	Mr. Tomaž Rogelj	International Center for Promotion of Enterprises	Executive Manager
Slovenia	Mr. Dušan Radoš	Silvaprodukt	Director
Turkey	Mr. Tolga Ozbolat	Metutech	Director of University Industry Activity Instruments
Ukraine	Mr. Andrii Melnyk	Ministry of Economic Development and Trade	Deputy Head of the Division of Investment and Innovation Activity Instruments
United Kingdom	Mr. Stephen Taylor	AREA Science Park, Trieste	Director, Technology Transfer Department

Eurasian Economic Commission

Name	Ministry and Department	Position
Mr. Anton Sinitsyn	Division of Industry Monitoring and Analysis Department of Industrial Policy Eurasian Economic Commission	Consultant

UNIDO representatives

Name	Department	Position
Mr. LI Yong	Office of the Director General	Director General
Mr. ZHAO Jie	Office of the Director General	Special Assistant to the Director General
Ms. Amita Misra	Regional Programmes and Field Representation Branch	Director
Ms. Nilgun Tas	Competitiveness, Business Environment and Upgrading Unit	Unit Chief and Deputy to the Director
Mr. Rene Van Berkel	Cleaner Production Unit	Unit Chief
Ms. Petra Schwager	Cleaner Production Unit	Industrial Development Officer
Ms. Olga Memedovic	Europe and Central Asia Bureau	Chief
Ms. Solomiya Omelyan	Europe and Central Asia Bureau	Programme Officer
Mr. Thomas Jackson	Europe and Central Asia Bureau	International Expert
Ms. Emina Alic	Europe and Central Asia Bureau	International Expert

Government of Slovenia

Name	Ministry and Department	Position
Mr. Janko Burgar	Ministry of Economic Development and Technology (MEDT)	State Secretary
Ms. Tanja Permozer	Ministry of Economic Development and Technology (MEDT)	Head of Division, DTI
Mr. Marjan Hribar	Ministry of Economic Development and Technology (MEDT)	Director General, Directorate for Tourism and Internationalization
Mr. Janez Rogelj	Ministry of Economic Development and Technology (MEDT)	Secretary, Director General, Directorate for Tourism and Internationalization
Ms. Leni Balent	Ministry of Economic Development and Technology (MEDT)	Advisor
Ms. Blanka Jamnišek	Permanent Representation of the Republic of Slovenia to the United Nations, the Organization for Security and Cooperation in Europe and other international organizations in Vienna	Ambassador



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