REVIEW OF POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK FOR INDUSTRIAL PARKS IN UKRAINE

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EXECUTIVE SUMMARY

Review of policy and legislative frameworks

The Ukrainian government recognizes the need to rapidly promote economic growth, has taken the necessary steps to define the corresponding policy objectives and has adopted new legislation and amended exiting normative acts in pursuit of this objective.

A review of the policies and legal framework governing industrial parks reveals the intentions of the lawmakers of the country to eliminate barriers to FDI attraction and investment; a very generous incentive package for investors is defined by law, codified procedures follow international best practices and offer the necessary flexibility to ease the establishment and operation of the industrial parks.

The adopted legislation, aligned with best practice approaches, places Ukraine on par with other countries competing for FDI to promote the growth of export-oriented, globally competitive industries. However, the ‘borrowed’ legal solutions would not address concerns associated with the country’s fragmented decision-making process, nor the repeated incidents of horizontal coordination failures, nor the concerns associated with the capacity of municipalities and regional governments to conceptualize and initiate industrial parks. In this context, despite the adoption of a tight and sophisticated framework, obtaining the desired outcomes would require significant effort. To put it bluntly: spurring investment and FDI attraction in Ukraine would hinge on implementation.

Recommendations

The much needed structural change of Ukraine’s economy requires measures that go beyond the problematic of a well-designed policy and legislative framework for industrial parks and FDI attraction. There are examples of special solutions designed specifically to attract FDI, to facilitate the upgrading of the skills of the workforce and to nurture an innovation ecosystem, which the Government may consider.

Industrial parks should target investments with a spillover effect in terms of upgrading the technology absorption capacity of Ukrainian companies. In this context, it is recommended to facilitate an environment within the planned industrial parks where foreign investors create lasting linkages to local companies. This could be achieved for example by implementing a carefully crafted supplier development program.

The planned industrial parks could also become the vehicles for fostering research-industry collaboration and the promotion of innovation entrepreneurship by stimulating local universities and research institutions to collaborate with the companies located within the parks.

Industrial parks are the appropriate instrument to drive the modernization of exiting industries, spur the creation of new ones and promote sustainable industrial development. Apart from attracting large multinational companies and their local suppliers, the planned industrial parks could also be designed to attract knowledge-based and innovation businesses, support start-ups, provide business incubation services, and in this manner create an innovation environment where local and international firms can interact with centers of knowledge creation.
**Proposed implementation actions**

The Ukrainian Government may design related policy actions based on the experience of other countries (highlighted in the report). To summarize, the formal consistency of the adopted legislation in Ukraine, as in Slovakia, helps avoid the ambiguity of fragmented legislation (compared to the Czech Republic); however, the Czech experience could be very helpful to the Government in designing flexible administrative practices.

The Ukrainian Government could direct implementation through very strong supporting institutions (following the examples of the Czech and Slovak Republics, France or even Malta) that manage administrative procedures in a more open, professional and responsible manner.

Encouraging the creation of industrial parks with a strong regional focus (following the examples of Italy and Spain) and introducing models for collaboration between regional and state authorities (leveraging the experiences of France, Bosnia and Herzegovina) and designing industrial parks targeting micro and small enterprises (following the example of Greece) are steps in the right direction.

The Ukrainian Government could introduce a model for sustainable collaboration with private sector companies, both potential tenants in industrial parks, as well as park developer and management companies. It is imperative, however, that the Government institutionalizes a framework for public consultations (involving all interested parties from the private sector, research, and foreign investors) to form the national consensus on the path for achieving the country’s economic policy objectives.

In selecting approaches to establish industrial parks via public-private partnership modalities, the Government may consider selecting competing investment priorities based on a procurement option pre-test which would reveal the ‘value for money’ of each option. Priority should be given to the entity (public or private) that would bear the least risk-prevention cost or alternatively the entity, which would be stuck with the least costs if the risks cannot be avoided.

**Proposed actions for better targeting of the industrial parks program**

Implementing a supplier development program could be a very significant step in attracting foreign investment in the planned industrial parks, as multinational companies would be more inclined to invest in areas where they could establish a sustainable presence through local suppliers. Establishing local companies as suppliers to large multinationals would also lead to retention of FDI and sustainable presence of the FDI in the country. In this respect, the Government may consider the highly successful Czech experience.

Using technology road mapping in designing the industrial parks in Ukraine and in defining the business support service they could offer would increase their positive impacts on the growth of the local economy and the ability to attract domestic and foreign tenants within the parks. It is critical to develop knowledge and technology extension programs in order to align the quality of local suppliers to multinationals and improve the technology base of domestic firms so they could become part of global supply chains. Technology road mapping could be a stage in
preparation for supplier development program, reinforced by *knowledge and technology extension* that compliments both programs.

A combined industry-technology park that co-hosts large multinational companies, local companies part of global supply chains and scientists, knowledge-based enterprises, innovation start-ups, could direct Ukraine’s scientific and research capabilities to respond to industry demand, which will make local companies more competitive. Co-hosting researchers and industry enterprises within the same space would also be a step in promoting *research-industry collaboration* and the transfer of technologies developed by local scientists to the production cycle of industrial enterprises within the parks. This is an essential step to push Ukraine on the path of *knowledge-based economic growth* and the generation of products and services with a higher value-added.

Making innovation infrastructure (such as Fab Labs and innovation incubation services) available in the industrial parks would function as a springboard of support companies along the entire innovation value chain – from defining idea, prototyping, early-stage technology and product development to production and marketing; and could help overcome systemic inefficiencies in Ukraine with respect to the provision of business support services to knowledge-based entrepreneurs and technology start-ups.
1. Economic context

Over the past decade the economic growth of Ukraine has been dependent on external demand and fluctuating commodity prices. The EU and the Russian/Eurasian Economic Union markets have been traditionally very important for Ukraine; however, Russia has been the single most important export partner (with 23.6% of exports in 2013 and 17.6% in 2014; Belarus and Kazakhstan accounted for an additional 6.5% of Ukraine’s exports), followed by Turkey, China and Egypt. Poland and Italy were the key export markets within the EU, each accounting for about 4% of Ukraine’s exports.

Today, the economic dynamics in Ukraine are far from optimistic. In 2014 the country’s GDP contracted by 6.8%, with a steady decline from quarter to quarter. In the first quarter of 2014, GDP declined by 1.2%, dropping to 4.5% in the second quarter, 5.4% in the third quarter and arriving at a very dramatic drop of 14.8% in the fourth quarter of 2014.\(^1\) In January this year the FDI stock in Ukraine was equal to $ 45.916 billion (about $1,072 per capita), which decreased by 29.6% compared to the data from the previous year.\(^2\)

These figures are a clear indication of a deepening recession. It is becoming apparent that local production and current levels of FDI inflows are not sufficient to ensure the financial stability of the country and sustain its future economic growth. At the moment the country is dependent on external financing.

Table: Estimated external financing requirement (2015)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Projected current account deficit:</td>
<td>USD 1.7 billion</td>
</tr>
<tr>
<td>Projected FDI inflow:</td>
<td>0</td>
</tr>
<tr>
<td>External debt service of government:</td>
<td>USD 7.7 billion</td>
</tr>
<tr>
<td>External debt service of private sector:</td>
<td>USD 8.1 billion</td>
</tr>
<tr>
<td>Projected purchases of foreign currency by households:</td>
<td>USD 1 billion</td>
</tr>
<tr>
<td>Required replenishment of foreign reserves:</td>
<td>USD 10.4 billion</td>
</tr>
<tr>
<td>Minus: Expected inflows from the IMF (approved EFF22)</td>
<td>USD 10 billion</td>
</tr>
<tr>
<td>Expected inflows from other multilateral and bilateral lenders:</td>
<td>USD 3.5 billion</td>
</tr>
</tbody>
</table>

\(^1\) The figures do not include Crimea and Sevastopol, and the figure for the fourth quarter of 2014 does include the eastern areas of Donbas controlled by the separatists. For details see: Adarov, A., Astrov, V., Havlik, P., Hunya, G., Landesmann, M., Podkaminer, L.: “How to Stabilise the Economy of Ukraine”; The Vienna Institute for International Economic Studies (WIIW), Vienna, Austria (April 2015)

To make matters worse, the armed conflict in the eastern part of the country has destroyed a large part of the local production and transport infrastructure. The hardest hit are traditional industries that have fueled Ukraine’s growth over the past decades, as these are concentrated in the conflict affected regions. For example, the drop in coal mining and metallurgy is a staggering 31%, while Ukraine’s machine-building industry, heavily dependent of Russian markets, declined by 21% in 2014.3

The Ukrainian economy is deeply segmented: mining and industrial regions are concentrated in the east of the country: Lugansk, Donetsk, Dnipropetrovsk, Zaporizhzhya, Kharkov, Poltava; while agrarian regions are in the west and the south of the country. The market for services and construction is concentrated in the larger urban centers: Kyiv, Lvov, Odessa; which are heavily dependent on the eastern regions in terms of output and employment.

**Table: Ukraine’s regional economic clusters**

<table>
<thead>
<tr>
<th>Region</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Western Ukraine</strong></td>
<td>This region concentrates the lighter industry (wood-based industries, food and food processing, electrical goods, clothing, furniture, toys, etc., and includes the regional entities Zakarpattya, Ivano-Frankivsk, Lvov, Volyn, Rivne. This region has not been affected by the armed conflict in the eastern part of Ukraine, it borders with current EU members and could establish cross-border economic linkages and attract FDI based on geographic proximity and labor cost advantages. It still requires investments in transport infrastructure and training/educational centers, etc. to attract FDI and spur the growth of domestic industries.</td>
</tr>
<tr>
<td><strong>Western Ukraine</strong></td>
<td>This region benefits from natural endowments conducive to agrarian production and wood-based industries. Within the region are Ternopol, Chernivtsi, Rivne, Zhytomyr, Vinnitsa, and Chernihiv. The region requires the development of appropriate infrastructure in order to attract FDI and upgrade the industrial base towards higher value-added segments in the production in wood-based industries and food processing industries.</td>
</tr>
<tr>
<td><strong>Black Sea</strong></td>
<td>In this region are Odesa, Mykolaiv, Kherson (i.e. excluding Crimea), which concentrate a large portion Ukraine’s tourism industry and agricultural production: cultivation of vegetables, fruits, nuts, etc.</td>
</tr>
<tr>
<td><strong>Kyiv and region</strong></td>
<td>The region benefited greatly from the ‘catching-up’ to international standards in market services; it is the center of public services and of the</td>
</tr>
</tbody>
</table>

3 Apart from the weakening growth dynamics in Russia and the falling ruble, Ukraine’s machine-building also suffered from the disruption of existing links in military-related production cooperation because of the export bans imposed by both countries, as well as Russia’s import-substitution efforts. For details see: Adarov, A., Astrov, V., Havlik, P., Hunya, G., Landesmann, M., Podkaminer, L.: “How to Stabilise the Economy of Ukraine”; The Vienna Institute for International Economic Studies (WIIW), Vienna, Austria (April 2015)
added competitive industries) | main educational facilities. It is especially attractive to FDI inflows, as it concentrates the most educated and skilled portion of Ukraine’s workforce and benefits from good transport connections.

**Eastern Ukraine: part not controlled by separatists**
(heavy industries, metallurgy, engineering, machine-building, electronics, automotive, aviation, mining)

This group of regions covers (together with the two regions controlled by separatists) the heart of Ukraine’s heavy industry. It includes the regions of Dnipropetrovsk, Zaporizhzhya, Poltava, Sumy and Kharkov, as well as parts of the Donetsk and Lugansk regions that are not controlled by separatists. Concentrated in the region are industrial and engineering export products, electrical goods and vehicles (mostly Kharkov), and the heavy industries: iron and steel, metals, heavy machinery and transport equipment, railways (locomotives and railway rolling stock), aircraft, etc. The export structure of this regional cluster has a strong export orientation towards Russia. Significant investments need to be made in both, industrial production infrastructure and transport linkages, if the region has to reorient its production and trade links to markets different than Russia.

**Eastern Ukraine: controlled by separatists**
(heavy industries, metallurgy, chemical industries, machine-building mining)

This region includes large parts of Donetsk and Lugansk and is heavily specialized in iron and steel, mining/minerals, machinery, railways, chemicals and plastics. The military conflict has led to the destruction of parts of its industrial capacities and transport infrastructure, to a dramatic fall in production and a large movement of population out of the region.

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**Source:** “How to Stabilise the Economy of Ukraine”; The Vienna Institute for International Economic Studies (WIIW), (April 2015)

Exports to Russia — accounting to quarter of Ukraine’s exports in previous years -- plummeted by 35% in 2014, while exports to the EU increased only by 12%: exports to the EU benefit from a unilateral abolition by the EU of most trade barriers for imports from Ukraine and with a highest export growth in agricultural products. As a whole Ukraine’s exports dropped by 14% (according to balance-of-payments statistics).

There is no question that the military conflict in the eastern part of the country has had a very negative impact on the investment climate and almost virtually stopped FDI inflows. The bleak economic forecasts are dampened also by significant reductions in the purchasing power of households caused by the depreciation of the local currency and the radical energy tariff increases, which effectively pushed consumer price inflation to 34.5% (annual basis). All this weighed heavily on private consumption, which fell by nearly 10% last year.

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4 The measure is a first step towards the implementation of the Deep and Comprehensive Free Trade Area (DCFTA) with the EU.
5 On a positive note, the combined effect of currency depreciation and falling domestic demand contributed to a sharp drop in imports of goods and services by 27% in US dollar terms — much more than that of exports (-20%), resulting in vastly improved trade and current accounts and a strongly positive contribution of real net exports to GDP growth.
In this context, Ukraine needs to set on a path of drastic economic growth, which considering exiting patterns could be spearheaded only by aggressive FDI attraction within the planned industrial parks, and sustained over time by carefully crafting a gradual transition to a knowledge-based economy that generates products and services with a high value-added.

2. Government initiatives for FDI attraction and retention

The Ukrainian Government has been developing a comprehensive FDI policy framework since 2000 based on technical support from the OECD, IMF, the World Bank, USAID and the EU Commission. Donor support has been dedicated to implementing measures for increasing competitiveness and institutional improvements, with a specific focus on attracting FDI. The resulting recommendations were partly implemented and resulted in establishing the FDI agency InvestUkraine to act as a ‘one-stop-shop’ for investors; also several regional and local governments have been very active in promoting FDI.

The ‘Investment reform’ of the Ukrainian Government (adopted in 2011) provides sector-based incentives, including for example total exemption from taxation until 2021 for aircraft manufacturers, shipbuilders, hotels, firms in the light industries and agricultural machinery producers. The Government also introduced a simplified tax regime for SMEs and offered exemptions from import duties for in-kind contributions to the capital of companies with foreign investment. Other related measures include exemption from import duties and taxes for goods imported and stored at bonded warehouses, no tariff for goods imported to or exported from special economic zones, etc.

Overall, the policy incorporates most successful practices implemented in other countries across the globe and could be defined as an attractive investment incentive regime; however, it did not result in drastic increases in FDI inflows.

Ukraine's major foreign investors in 2014 come from: Cyprus (29.9% of FDI), Germany (12.5%), the Netherlands (11.1%), Russian Federation (5.9%), Austria (5.5%), the United Kingdom (4.7%), the British Virgin Islands (4.4%), France (3.5%), Switzerland (3.0%), Italy (2.2%) and United States (1.9%).

As a general comment, FDI inflows to Ukraine are at the levels observed in neighboring EU countries (Romania, Poland); however, foreign observers note that investment registered as ‘foreign’ are in fact ‘round-tripping’ domestic capital as the main investing country in Ukraine is...

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6 As of 2012, corporate income tax and dividend tax were reduced to internationally competitive levels. In addition, the Ukrainian FDI law provided for special regimes similar to those in other countries.

7 Many Ukrainian and Russian enterprises continue to channel investments through Cyprus due to a favorable bilateral tax treaty. In 2012, Ukraine and Cyprus signed a Double Taxation Convention to replace the bilateral agreement dating from 1982. Under the new treaty, which was ratified by the Parliament in July 2013 and entered into force in August 2013, most income earned in Cyprus is taxed between 5 and 15 percent, reducing the tax gap between the two countries. While the Government of Ukraine announced plans to introduce a 12 percent tax on the operations of companies registered in offshore countries (in order to increase collections to the Pension Fund), Cyprus was not included on this list. See: “Investment Climate Statement”; U.S. Department of State (May 2015)
Cyprus, a country identified as a tax haven frequented by Russian and Ukrainian investors (88% of Ukrainian outward FDI stock has gone to Cyprus).\(^8\)

Based on this observation, it is assumed that most probably, a large part of the FDI inflow to Ukraine, is not genuine foreign capital but round-tripping domestic capital. Round-tripping capital through holdings abroad does not bring new capital, technology and knowledge into Ukraine, as the investing holdings are in fact artificial constructions aiming to avoid taxation. In this context, the attracted FDI so far, would likely not be instrumental in bringing change with respect to technology and knowledge extension programs needed to upgrade the skillsets of the Ukrainian workforce, nor will it help local companies to integrate in global supply chains.

### 2.1. Conclusion

Current forecasts estimate the FDI inflows to Ukraine at 2.4\% of GDP until 2018.\(^9\) However, this figure may be based on an underestimation of Ukraine’s potential to attract and retain FDI (provided, of course that respective measures are carefully designed and implemented).

Considering the current economic situation, and the very negative impacts of the armed conflict in the eastern part of the Ukraine, it is apparent that, at least in the short to medium term, only FDI could be the source of financial stability and support for the transformation of Ukraine’s economy to a more competitive knowledge-based growth pattern based on technology and knowledge extension, inserting local companies in global supply chains, spurring innovation entrepreneurship and the generation of higher value-added products and services.

The planned industrial parks would provide excellent information and telecommunications services, as well as technology and knowledge extension services that are critical for innovation, technological learning and company growth.

Basically, industrial parks are vehicles to attract investments in countries with suboptimal business environment and a regulatory system that is not investor-friendly as these provide attractive special arrangements in a limited territory. Similar initiatives have delivered excellent results in countries as diverse as **China, Turkey, Chile, India**, as well as in **Poland** and **Hungary** prior to EU accession.

Establishing industrial parks, which benefit from a special institutional and regulatory regime, would be an additional incentive to foreign companies to invest in Ukraine, as these allow business start-up in within a rather short period of time, under good infrastructure and operational conditions.

Regardless of potential shortcomings, the planned industrial parks in Ukraine would offer investors superior institutional conditions and infrastructure compared to the rest of the

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9 See: IMF Country Report No. 14/145 (May 2014)
country. They would provide modern services and a physical infrastructure not available in the rest of the country, and in this respect, investors that may shy away from setting-up business operations elsewhere in the country, could be interested in investing in the planned industrial parks.

2.2. Recommendation

The much needed structural change of Ukraine’s economy requires measures that go beyond the problematic of a well-designed FDI policy. Multiple analytical reports indicate significant shortcomings with respect to investment facilitation in general, including key components of the investment climate, such as low institutional efficiency and fraught market competition. While this lowers expectations at to the ability of Ukraine to attract FDI, available are examples of special solutions designed specifically to attract FDI, to facilitate the upgrading of the skills of the workforce and to nurture an innovation ecosystem; the Ukrainian Government merely needs to commit to their implementation and take actions to ensure their sustainability over time.

This recommendation is line with the current policies of the Ukrainian Government, which identified four specific measures for attracting FDI in order to fuel the country’s sustainable economic growth, namely: (i) establishing industrial parks, (ii) designing a contractual regime for large and technology-intensive projects, (iii) promoting spillovers and clustering, and (iv) operating an efficient investment promotion at the regional level.

Implementing an industrial park program that combines all these measures would likely help achieve the desired outcomes and would fulfill the policy objectives. However, these need to be implemented not as a sequence of measures, but in concert. Also, so far the approach to industrial park development in Ukraine has been centralized, and would likely not deliver the results, which could be achieved by implementing a bottom-up approach spearheaded by the regional governments and municipalities.  

A special contractual regime for large investment projects would help attract the most desirable FDI within Ukraine’s industrial parks. Such contractual regime allows defining individually-tailored packages of incentives and stricter control of contract implementation, where investors are guaranteed access to fair or even priority treatment by the Ukrainian authorities in cases where the investment would have important job creation and technological development effects.

Establishing industrial parks, in the course of implementing the Government’s FDI attraction policy, should target investments with a spillover effect in terms of upgrading the technology absorption capacity of Ukrainian companies. In this context, it is recommended to facilitate an environment within the planned industrial parks where foreign investors create lasting linkages

10 For this to happen regional governments and municipalities need to be stimulated (legal authority and financial means) to foster the establishment of industrial parks.
to local companies. This could be achieved for example by implementing a carefully crafted supplier development program.

The planned industrial parks need to be also the vehicles for fostering research-industry collaboration and the promotion of innovation entrepreneurship by stimulating local universities and research institutions to collaborate with companies located within the parks.
3. The economic development role of industrial parks

An industrial park is a “tract of land developed and subdivided into plots according to a comprehensive plan with or without built-up factories, sometimes with common facilities for the use of a group of industries.”¹¹

Industrial parks have been around for over 6 decades and have evolved in terms of facilities and support services they provide to tenant companies. The latest trend is to use industrial-technology parks to promote knowledge-based industries and innovative technologies entrepreneurship.

**Table: The evolution of industrial parks**

| First generation: (early 1970s) | ✓ Public sector driven development and operation  
✓ Government subsidies for services & facilities  
✓ Dedicated public body established that develops, operates and regulates the park/zone  
✓ Industrial activity: typically assembly in halls and storages  
✓ Rather simplistic architecture  
✓ Market pull |
|-------------------------------|--------------------------------------------------|
| Second generation: (1975-1985) | ✓ Built with greater attention given to the requirements of science, technology and business  
✓ Science and technology push |
| Third generation: (late 1990s) | ✓ Greater flexibility in the use of buildings and space  
✓ A wider range of support services for firms  
✓ Creating attractive place to work and live  
✓ Technology push and market pull  
✓ Public-Private Partnership: gradual shift from ad-hoc private-sector licensing to planned, coordinated partnership approach  
✓ Private sector involvement led to improved services, greater product differentiation and non-price-based competition |
| Latest generation (2000 – present) | ✓ Private developer develops, owns and operates the park/zone on a cost-recovery basis  
✓ Park/zone authority only regulates activities within the park/zone  
Outsourcing of core functions to private sector  
✓ Eco-parks: strive for high environmental, economic and social benefits |

¹¹ As defined by UNIDO
Industrial parks co-host various actors in the supply chain: buyers, producers and suppliers; so that they operate in the same location, which reduces transaction costs as well as sets new standards for economic activity. Another benefit of the parks is that the companies located within industrial parks use the services of local suppliers, which in turn creates linkages, and most importantly, technology diffusion and knowledge transfer to the local business community.

The concentration of certain types of companies attracts innovation entrepreneurship and supports the development of clusters. In this context, from the very beginning Ukraine’s industrial parks need to be designed to link foreign investors with regional clusters and the local innovation ecosystem in order to use the industrial parks as vehicles to promote knowledge-based economic growth.

<table>
<thead>
<tr>
<th>Crucial elements of an industrial park program that leverages innovation capacity</th>
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<tbody>
<tr>
<td><strong>National development strategy</strong></td>
</tr>
<tr>
<td>Industrial parks can only contribute to industrial development in the context of an overall development strategy. Some industrial parks are more focused on innovation activities, being either technology parks, or science parks. For the latter, important actors in the field of innovation like universities, research centers, technology transfer offices, and patent offices are located in the park and contribute directly to innovation among the tenants of the parks. Moreover, they contribute to the positioning of the park, emphasizing special capabilities and expertise in such parks, and thus attracting similar enterprises.</td>
</tr>
<tr>
<td><strong>Clusters</strong></td>
</tr>
<tr>
<td>Clusters are defined as groups of interlinked companies, suppliers and associated institutions providing a related group of products and/or services in a specific geographic region. In a globalized economy in which global value chains link companies across borders, clusters have become an important element of regional innovation systems. Clusters collaborate with research institutes, technology labs, productivity centers, venture capitalists and other providers of business development services. Second, companies and research institutions can build connections to better learn and innovate, as information and knowledge are best developed and exchanged locally. Third, business formation tends to be higher in clusters. Start-ups are more reliant on external suppliers and partners.</td>
</tr>
<tr>
<td>Industrial parks that are developed in association with cluster projects will often have more of a service-driven approach and this applies to both high-tech clusters and more traditional industrial sectors. Cluster development should be part of a larger strategy to improve overall business environment conditions, by upgrading skills and access to finance, streamlining government rules and regulations, and by being open to foreign investment and competition.</td>
</tr>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>Since an industrial park is a type of real estate property, the golden rule for property development also applies. Unless the location is well chosen, an industrial park will fail to attract many firms. The size of the plots of an industrial park/zone and its cost must also be in accordance with business and market needs and expectations. More specifically, industrial parks need to be easily accessible (proximity to a port or an airport, and road/railway transportation to the infrastructure and the nearest urban center).</td>
</tr>
</tbody>
</table>
There also should be a large supply of human resources available at a reasonable cost, and quality of life and personal/cultural services should be taken into consideration.

**Infrastructure and service provision**

Parks are more than simple physical infrastructure. They are policy tools to foster regional development, investment, competitiveness and partnership. So-called ‘soft services’ of industrial parks related to management support of a hosted company are of utmost importance. An industrial park must offer: stable supply, high and consistent quality, and low cost of all services. Firms require various inputs, including electricity, telephone, internet, water, sewage treatment, transportation, and residence. A service-driven approach means that industrial parks will provide a variety of building accommodation to host SMEs and start-up companies, and there might also be a resource center to host the cluster animation organization. Joint industrial test or development platforms might also be created to ensure that companies can develop their innovations and, for example, facilitate exchanges between research organizations and SMEs.

**Management capacity**

The success of industrial parks depends on the efficiency and responsiveness of its management. A park’s managing company must provide guidance and support so that business planning is conducted smoothly. This includes marketing, information, procedural support, and trouble-shooting; quick and effective responses to customer demands are key.

**Innovation linkages**

Support institutions should be established that help firms meet the information, skill, finance and other needs that are difficult to satisfy in open markets. A nurturing environment is required to foster vibrant industrial development. Ensuring access to vital services that support innovation and learning is a critical part of establishing such an environment. Many of these services are supplied through the market in industrialized countries, but even these countries find it necessary to augment what is supplied through the market with subsidized services.

**Marketing and promotion**

Industrial parks today target future tenants against the background of a highly competitive market. Park managers should promote and market the industrial park and its specialized services at national and international events that suits the needs of the tenants. The park managers also need to ensure that firms are maximizing the benefits of proximity to other enterprises, encouraging linkages between them and with service providers. Many successful parks apply guidance to investors in the form of eligibility guidelines to ensure priority sectors and firms are encouraged.

**Networking**

Industrial parks should develop links with similar organizations existing in local and regional areas. Links can be encouraged by holding regular meetings between innovation organizations and the park developers to share a vision, objectives, mutual knowledge, and to identify future actions. The park may also finance a short project between a tenant and an innovation organization in order to launch a longer collaboration. Networking increases the spectrum of collaboration (sharing of equipment, transport facilities, security, etc.), increases visibility for investors, increases the quality of services that industrial parks can provide for tenants, and facilitates the exchange of knowledge and best practice, either in the development of industrial parks or in their management.

*Source: UNIDO*
3.1. Recommendation

Industrial parks are the appropriate instrument to drive the modernization of exiting industries, spur the creation of new ones and promote sustainable industrial development. Parks can be designed to overcome market and institutional barriers preventing firms from easily accessing information, technological knowledge and access to finance.

Apart from attracting large multinational companies and their local suppliers, the planned industrial parks in Ukraine could also be designed to attract knowledge-based and innovation businesses, support start-ups, provide business incubation services, and in this manner create an innovation environment where local and international firms can interact with centers of knowledge creation. For this reason a core feature of the Ukrainian industrial parks could be establish them as innovation hubs to promote interactive learning and the commercialization of research outputs developed by Ukraine’s research community.

In sum: industrial parks could be instruments for increasing regional and national industrial competitiveness, promoting the generation of high-value added products services by the local companies, support the growth of competitive industries and addressing problematic issues such as ‘brain drain’.^12

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^12 Innovative entrepreneurs are highly qualified domestic professionals and industrial parks could be designed to encourage knowledge-based business creation as an alternative to emigration to pursue business activities elsewhere.
4. Industrial parks – success factors and common pitfalls

Industrial parks are initiatives that implement governments’ policies for attracting FDI and increasing exports, generating employment, generating tax revenues. An equally important objective of these initiatives is to establish linkages between foreign multinationals and local companies in order to improve the socio-economic conditions of the country, or to eliminate regional disparities (when located in disadvantaged regions).

The term “industrial park” is used interchangeably to define a number of very different initiatives. Often it is (misleadingly) used to define “free trade zones” (or “commercial free zones”), which are essentially fenced-in, duty-free areas, that offer warehousing, storage, and distribution facilities for trade, trans-shipment, and re-export operations; or alternatively to define “export processing zones”, which are industrial land plots established primarily to attract export-oriented manufacturing or extractive industry investments.

The term is used also in reference to “special economic zones”, which are large industrial plots that host a variety of industrial and service sectors, targeting both foreign and domestic markets and providing, to a varying degree, special tax or regulatory incentives.

Similar initiatives are the “specialized investment zones”, which target specific sectors or economic activities and these include science/technology parks, petrochemical zones, logistics parks, and airport-based zones, etc. What defines these parks/zones is their sectoral focus (e.g. no access to companies in non-priority sectors) and for this reason the infrastructure they offer to tenant companies is tailored according to the needs of the targeted sectors.

4.1. Design and management

There is a global trend to move away from ‘free trade zones’ and ‘export processing zones’ and promote the establishment of specialized economic or investment zones. It is more appropriate to associate these with the concept of an ‘industrial park’-- especially in the context within which these are planned in the Ukraine -- as plots of land for industrial use that concentrate industry and services that generate high value-added.

Ukraine is in a complex economic situation, affected by an armed conflict and in this context experiences from conflict affected countries may apply. These experiences indicate that establishing industrial parks focusing on higher value-added industries requires13:

- The functioning of an independent regulatory body, based on a mandate defined by law;
- Engaging the private sector in the development and the management of the parks;
- The availability of mechanisms for public-private partnerships (PPP) to develop the necessary infrastructure, including clear and transparent models for PPP financing;

✓ Leveraging investors located within the parks in the modeling of local clusters and in managing the supply chain, including inserting the local suppliers of foreign multinationals in global value chains;
✓ Establishing fully integrated industrial parks, providing regulatory and administrative incentives to their occupants, the availability of business support services, fully inclusive single window and one-stop-shop services for business, etc.;
✓ Implementation of policies for innovative development linked to transferring R&D activities to the parks, workforce skills development infrastructure, focus on local SME and linking industrial parks’ to regional development objectives.

The winning proposition for attracting investors in an industrial park is not reliance on tax and customs incentives, but a stronger focus on business support and business development services. Lessons learned from conflict affected countries, (i.e. Iraq, Egypt, Jordan) reveal that administrative incentives play a greater role in promoting the development of industrial parks, compared to tax incentives, customs incentives or straight forward grants.

Another lesson learned from these countries is that business support services, specifically for incentivizing technology transfer and knowledge extension, promoting research-industry collaboration and R&D activities, as well as offering workforce skills development services, are more instrumental in attracting investment, both foreign and domestic.  

Table: Factors for successful industrial parks in distressed regions

| ✓ Establishing industrial parks based on cluster zoning model to facilitate integration within the industry supply chain |
| ✓ Establishing an independent regulatory body that creates, regulates and monitors the industrial parks (backed by law) |
| ✓ Establishing industrial parks based on regional and sector development policies |
| ✓ Providing modern infrastructure (priority of greenfield vs. brownfield investments in infrastructure) |
| ✓ Development and management of the industrial parks by private sector representatives |
| ✓ No minimum capital requirements, possibility of 100% foreign ownership and free repatriation of capital and profits, competitive land lease tariffs, and duty exemptions on imports and exports |
| ✓ Providing one-stop-shop service to businesses within the parks |
| ✓ Availability of workforce skills development centers, i.e., vocational training centers ensuring supply of skilled workforce (establishing knowledge and technology extension services in collaboration with foreign multinational companies) |

Streamlined labor procedures for foreign nationals  
Providing business matchmaking services (e.g., linking foreign investors to local suppliers and partners)  
Duty free import of machinery and raw materials  
Availability of utility services at competitive rates  
Encouraging the creation of specialized sector clusters (industry, services, agriculture, tourism, finance, entrepreneurship, renewable energy, etc.)  
Attracting R&D activities through appropriate innovation infrastructure and availability of financial instruments to facilitate research-industry collaboration (e.g. generating products with high value-added and enhancing the scope of industrial operations within the parks)  
Providing modern information technology and telecommunications services  
Providing cluster of technical and support services (e.g. quality and productivity center, business incubator, technical extension services specialized companies for quality standards and testing, R&D center focused on particular industries located within the parks)

<table>
<thead>
<tr>
<th>Table: Common pitfalls in establishing industrial parks</th>
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<tbody>
<tr>
<td>Focus on reforms dedicated solely to establishing industrial parks conflicting with the economy-wide reforms.</td>
</tr>
<tr>
<td>Weak links between industrial policies, sector development, export and investment and industrial park development strategies resulting in parks that are uncoordinated development initiatives.</td>
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<tr>
<td>Conflicts between industrial parks’ authorities and investment promotion agencies.</td>
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<tr>
<td>Private sector role is not sufficiently facilitated.</td>
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<tr>
<td>Lack of transparency in most processes for both investors and private developers with respect to land designation, bidding processes, selection criteria.</td>
</tr>
<tr>
<td>Lacking legal infrastructure for PPP financing.</td>
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<tr>
<td>Excessive tax and customs incentives</td>
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<tr>
<td>Undue competitive disadvantages among domestic firms within and outside of the industrial parks</td>
</tr>
<tr>
<td>Competition among industrial parks based on tax incentives that create distortions</td>
</tr>
<tr>
<td>Investment attraction and incentive packages that do not encourage linkages with local suppliers</td>
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<tr>
<td>Not established land designation and land allocation procedures</td>
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<tr>
<td>Poorly developed off-site infrastructure and unreliable provision of utilities services</td>
</tr>
<tr>
<td>Lack of business support and development services</td>
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</tbody>
</table>

4.2. Experiences applicable in the specific context

International experience indicates that it is necessary to set realistic expectations based on cost benefit analysis to determine whether it is more efficient to develop the industrial parks based
on private sector or public sector investment. The public authority should focus on its regulatory functions and not dedicate efforts to non-core functions and services that could be outsourced to the private sector. In this context, it is critical not to create competition between public and private industrial parks by offering diverging incentives. This could be achieved through the defined by Ukrainian law physical development standards and criteria for the approval of the privately and publicly developed industrial parks.

Another success factor is enforcing labor regimes that are consistent with international norms, as this would increase the quality and productivity of the workforce. Indirect exporter benefits (i.e. duty free access to the parks) should be given to local suppliers located within the parks to increase linkages to foreign buyers and markets. Collaborative relationships between investment projects in the parks and innovative local firms and research institutions should be encouraged in order to derive maximum benefits from the parks for the local economy and to develop business networks and clusters.

A major factor contributing to the success of industrial park programs is the autonomy and effectiveness of the body charged with overseeing the operations of the parks in terms of authority defined by law over staffing, budgets, spending and policy making. In order to reinforce the customer-oriented focus of the industrial parks, it is imperative to establish an independent board composed of representatives of all key ministries and interested private sector representatives and to provide one-stop shops in each of the industrial parks that provide all necessary assistance, licenses and approvals.

The choice of location is very important, especially in light of necessary infrastructure expenditures on the part of the government. In this context, an industrial park needs to be located near existing infrastructure in order to minimize the public costs that would be incurred in establishing it. There should be also an aggressive use of land use planning and zoning instruments in locations defined for industrial and commercial development in order to attract investment by private developers. At the same time, a government unit dedicated to land use planning and infrastructure development should be established to ensure adequate planning and support of investment in off-site infrastructure.

To stay customer focused and attractive to both foreign and local investors, the industrial parks should be operated on a cost recovery basis and if subsidies are provided these should decrease gradually over time so the fees charged by the parks are based on market prices.

A crucial aspect which is often overlooked is the simplification and streamlining of investment approvals, expatriate work permits, granting of import and export licenses, accelerated customs inspection and automatic foreign exchange access. International best practice teaches us that it is very important to establish a simple declarative investment registration system (applications submitted to a single government office that provides the license) and to promote transparency and predictability a list of ineligible investment activities should be published, rather that specifying what are the eligible activities.
5. Tax incentives

Industrial parks offer a unique opportunity to increase the efficiency of the tax administration and streamline the national tax system. In this context, the tax incentives provided to firms located within the parks (on a pilot basis) could be gradually harmonized with the national tax system and in this way the government may use the lessons learned from the provision of the special tax benefits introduced (on a pilot-basis) within the parks to advance the overall tax reform agenda.

5.1. Attracting the location of R&D activities within industrial parks

In order to establish a focus on the generation of high-value added products and services within the parks, the Ukrainian Government may consider providing tax incentives for R&D activities located in the parks. An R&D tax incentive would allow companies to receive credit for expenses incurred for R&D and innovation to lower their tax liability.

The key element of such an incentive scheme is allowing businesses to deduct from taxable income the costs of all R&D activities, most notably the cost of the failed ones. Because of this, businesses would be more prone to devote their own funds to new process and product development, as well as in some instances to basic research.

A core feature of such an incentive scheme is defining which costs can be applied, i.e., the qualifying expenses. While experiences from various countries vary, the common underling feature of eligible R&D expenses is that the costs must have been incurred in the process of resolving a technological uncertainty; so the credit scheme cannot be applied to recuperate costs for copying successful models, i.e. reverse engineering.

It is important to note that the R&D tax incentive could be a combination of a tax deduction for qualifying expenses in the year these have been incurred, as well as a credit of such expenses that can be carried over the following tax years.

Providing an R&D tax credit would be a powerful incentive to move R&D departments within the parks. Under such a credit scheme a business that has incurred expenses for performing R&D in-house would have the option to apply the credit - either in full or incrementally - to lower its taxable income not only in the current year, but also in subsequent years.

15 This could be achieved through the use of performance based incentives introduced in the general tax code rather than through special legislation.
16 Companies, especially large foreign multinationals that depend on innovation for success most often take advantage of R&D tax incentives: the funds saved from taxes can be invested in R&D activities to support profitability and growth.
17 In general, a deduction would not be very effective as it allows writing off R&D expenses from the tax liability for the current year. In effect using the deduction depends on the financial results of the company at the end of the year. Because of this uncertainty business may be hesitant to invest aggressively in R&D and innovation. A credit that can be carried forward effectively allows businesses to deduct expenses incurred in the current year from tax liability in the following years. This flexibility incentivizes business to dedicate funds to R&D more aggressively.
5.2. State Aid Issues

As Ukraine is on the path of EU accession, the Government should consider establishing tax and incentive schemes aligned with current EU rules (even though these may change by the time Ukraine joins the EU).

It is important to note that state aid issues are attached to instituting an R&D tax incentive mechanism. Basically, tax incentives reduce the state’s corporate tax income, and such a reduction is considered state aid to private domestic companies (even if these are local subsidiaries of foreign multinationals) and is subject to the EU state aid restrictions. However, permissible is aid from the budget or EU funds that does not exceed EUR 200,000 for three calendar years (de minimis state aid); and aid that is provided for the advancement of less economically developed regions. Also, promoting R&D, competitiveness and innovation is viewed by the EC as an overriding requirement that justifies breaking EU rules.

Despite the available exceptions, if the Ukrainian Government considers introducing an R&D tax incentives regime, it must be non-discriminatory and should not impose territorial restrictions.  

Another restriction under EU state aid rules is the selectivity of the R&D tax incentive, i.e., when the only certain type of companies, i.e. SMEs or companies in certain geographic location or sector can take advantage of the incentive.

Other areas of special attention include restrictions on the recovery of VAT on R&D expenditures: the incentives should not prevent the creation of public-private partnerships and cost-sharing arrangements when R&D efforts requiring the pooling of resources from public and private entities or the outsourcing of research by private entities to public ones (contract research).

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18 Article 87(1) of the EC Treaty, “any aid granted by a Member State or through State resources in any form whatsoever, which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States, be incompatible with the common market”.  

19 An example of such a restriction is a legal provision which limits the benefit of an R&D tax incentive to activities performed only domestically and excluding companies from conducting or outsourcing their R&D elsewhere in the EU. The ECJ has reviewed the R&D incentives of several Member States (Spain, France, the Netherlands, and Belgium) and the EC requested several of these countries to amend their tax legislation or practices. Examples of other restrictions include a tax incentive covering R&D costs incurred anywhere in the EU, but subject to administrative approval e.g. when such approval is needed only for R&D costs incurred abroad, and a tax incentive covering the costs of subcontracted R&D, but limiting the proportion of R&D that can be subcontracted to non-resident entities.  

20 The fact that some businesses have higher levels of R&D spending than others and benefit more from the R&D tax incentives, like those active in R&D-intensive sectors, does not mean that the measures are selective.
5.3. Conclusion

Ukraine’s R&D tax incentives regime is fairly limited: companies that are contracted under state development programs and research organizations do not pay VAT and receive exemptions from custom duties on imported scientific equipment or materials that cannot be produced in Ukraine.

These tax benefits were most widely used in the period 1999-2005, as Ukraine had several so called ‘technology parks’, in essence clusters of high-tech companies and groups of scientists and engineers.21 An R&D tax credit for companies located within industrial parks could be instituted based on existing precedent. Activities eligible for the R&D tax credit could be either broadly defined, similarly to the R&D credit in United States, or follow the French or Chilean examples.22 In any event it is important that in-house R&D activities are eligible for the credit in order to spur the transfer of R&D activities within the industrial parks.

5.4. Recommendation

As in-house R&D, contract research and collaborative research are the paths to generate high value-added products and services within the parks, it is strongly recommended to institute an aggressive tax credit scheme, following the Chilean and French models, where at least initially, certain activities are targeted and eligible for the credit.

Companies engaging in qualified activities should be able to carry forward the credit – this is important to incentivize firms to engage in R&D projects that are more complex and extend beyond the current year. As the tax incentive mechanism is intended to help jumpstart business-led R&D, it should allow both, the full deduction of expenses for in-house, contract and collaborative research in the current year, as well as the ability to carry forward expenses at the election of the business. Following the Chilean practice there could be a cap on the carry forward amount of eligible R&D expenses; however, the cap should be high enough to effect a change in the mindset.

In order to promote the transfer of R&D activities within the industrial parks, at least initially, the R&D tax credit should aggressively promote contract and collaborative research between foreign investors and local research organizations. This is particularly important to cure the disconnect between the supply of innovative and scientifically-advanced solutions by exiting research institutions and the demand of businesses for such solutions.

Apart from promoting in-house R&D, a well-functioning and targeted R&D tax credit will likely help change the mind set and increase funding opportunities for research institutions. It would, at least in the initial stage, foster contract research for very specific and highly technical scientific issues, as well as collaborative research between outside researchers and company

21 The tax incentives regime was abolished in 2005, based on accusations of abusive practices; however, the Government is considering the reintroduction of some financial incentives to stimulate R&D and tech-parks.
staff devoted to in-house R&D. In this context, an aggressive R&D credit scheme would also provide the market based support for policy measures to promote more applied research at universities and research institutions.

Finally, an aggressive R&D credit would help change the mindset of Ukrainian companies to devote more resources to R&D – often in excess of their ability to recuperate such costs under the tax scheme - as well as to reward companies that are currently performing in-house R&D and simply cannot account for it.
6. Industrial park governance structure

International experience reveals that one of the most critical factors for the success of industrial parks is involving the private sector in their development and operation. A significant number of government or municipally-managed industrial parks have been proven less effective than their private counterparts. To state it bluntly: the success of an industrial park depends on its structure of governance and the quality of its management.

However, the private sector would be hard pressed to successfully bring an initiative such as an industrial park to fruition on its own. Since the objective of an industrial park is to accelerate growth in particular sectors, increase employment and generate government revenues etc., the parks should be considered as part social investment. In this context, regardless whether an industrial park is established as a private or a public initiative, it still requires significant public support and commitment.

It is imperative that the park development team, i.e., its initiators, attempt to seek representation from all stakeholders and relevant sectors, including: government, universities/vocational institutions, private sector, finance sector, other enterprise development initiatives/relevant sector initiatives.

6.1. Park manager

International experience reveals that the quality of the management team is critical for a park’s performance and success. Best practice suggests discouraging governmental entities from championing business development initiatives like an industrial park, in part because they do not provide the appropriate entrepreneurial mindset and culture to the project. For similar reasons, academic institutions are also not the best choice, as they rarely bring the appropriate level of entrepreneurial mindset, focus, and culture.\textsuperscript{23}

The park manager must possess: (i) broad entrepreneurial experience (ii) specific knowledge in sector of specialization, as well as deep knowledge of marketing, finance, and technology management; (iii) a wide network of contacts; (iv) ability to effectively market the park to potential clients, public bodies and stakeholders; (v) ability to identify clients’ needs and facilitate their access to outside resources; (vi) ability to work with the board of directors to impart the park’s vision and mission to the general public and, through the selling of that vision, enlist support.\textsuperscript{24}

\textsuperscript{23} For details see: “Flagship innovation infrastructure: a pre-feasibility study” The World Bank (2013)

\textsuperscript{24} The planned industrial parks offer an excellent opportunity to leverage the expertise of the Ukrainian engineering and business diaspora to provide much needed connections to international markets.
6.2. Board of Directors

The effectiveness of the park’s board of directors is also an important factor for its success. In addition to fiduciary obligations and hiring the management team, the purpose of a board of directors includes thinking strategically and setting broad policies that will ensure the park’s sustainability.

6.3. Conclusion

The quality of the management team is critical for the performance and success of any business support infrastructure initiative, including an industrial park. Strong private sector participation in the management, coupled with transparent governance structure would on, one hand increase the credibility of the park -- which is imperative in order to attract meaningful foreign investors and domestic firms to locate their operations within the park; and on the other, would help ensure the sustainability of the public investments made under the industrial parks program.

A capable park management will help generate revenues from business support services, engage and build the capacity of local suppliers and increase their linkages within the global supply chains, which as a whole, contributes to achieving the core public policy objectives for setting-up the industrial parks in the first place.

6.4. Recommendation

In order for an industrial park (or science/technology park, or any business support infrastructure) to succeed it needs professional management with strong private sectors expertise as opposed to receiving direction and guidance from government or municipal officials or academics. In this context, each park should be managed by a specialized private company on the basis a of a performance-based management contract with very clear and transparent benchmarks and firm performance monitoring indicators. This recommendation is fully aligned with the policies of the Ukrainian Government and the current legislation on industrial parks.

Even if a particular park is publicly-funded, its governance structure and management should mirror, to the maximum extent possible, these of a privately-funded and operated industrial park. It is imperative, however, to put in place a predictable and performance-based monitoring and evaluation system for fiscal incentives and for private investment. This will help improve

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25 Leveraging impact evaluation techniques helps identify the changes in outcomes that are generated by the program itself and are particularly useful for testing out different mechanisms and program variations. Methodologies can be designed to fit the specific circumstances of each program. With the knowledge gained from impact evaluation, future iterations of each program can be made much more effective for encouraging local production in the higher value-added segment.
transparency, budgeting and financial planning, as well as will help ensure that investment incentives are continuously aligned with government objectives, which may change over time.
7. Review of Ukraine’s legal framework on industrial parks

Ukraine’s legislation is broadly aligned with international best practices, and the success of the industrial park program is dependent on its implementation.

7.1. Policy objective

The objective of the legal intervention is FDI attraction and satisfying existing strategic investors for market-ready industrial property and industrial real estate development. Following this objective, Ukraine’s State Agency for Investment and National Projects (or National Projects Agency, NPA),
initiated the Industrial Parks of Ukraine Project, dedicated to “creating modern industrial and manufacturing infrastructure, increasing competitiveness and investment attractiveness of the regions”. Ten pilot industrial parks with modern engineering and service infrastructure were supposed to be established in different regions of Ukraine under this project.

7.2. Institutional support

NPA was designed to serve as a sort of ‘clearing house’ for investment projects supported by the Government of Ukraine and its role was to provide a government-level review of potential investments proposed by regional governments.
The agency’s commercial outreach program Invest Ukraine provided the format for supporting investment projects. The agency also organized investment conferences and road shows to highlight investment opportunities in Ukraine. Several regions also dedicated efforts to investment support.

7.3. Investment framework

Ukraine adopted over the years a comprehensive legal framework in pursuit of the stated policy objective. It includes multiple normative acts: the Law on Investment Activity and the Law on Protection of Foreign Investment of 1991, which establish the general investment framework. Subsequent laws and regulations enhance the framework. The evolution of the framework includes: the Law on the Foreign Investment Regime and Cabinet of Ministers' Resolution on

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The NPA announced these highly optimistic plans several years ago; however, no progress has been made, except for registering some of the enlisted industrial parks, and their legal status is questionable as the land plots were not properly allocated for such projects. The NPA was dissolved as a state entity based on allegations of untransparent activities.

\[\text{\textsuperscript{27}}\]

The NPA was not particularly active over the past year and was dissolved by the Cabinet of Ministries of Ukraine (Decision 290-p “On National Projects Agency’s Liquidation Commission”). A special commission assessed the performance of the NPA and its functions were transferred to various government authorities. The industrial parks initiative was transferred to the Ministry of Economic Development and Trade; it is however, unclear what unit/department within the MOEDT is directly responsible for the industrial parks program now.

7.4. Investment incentives

Ukraine’s investment package is fairly generous by international standards. Foreign investors are exempt from customs duties for any in-kind contribution imported into Ukraine for the company charter fund. Through 2018, Ukraine offers a 100% corporate tax exemption on income from projects resulting in job creation in qualifying industries, including high-tech, eco-friendly, manufacturing and export-oriented industries. This incentive is available to both new projects, as well as reconstructions and upgrades of existing enterprises. Ukraine also offers generous depreciation rates for most fixed assets, including property, plant, and equipment to foreign and domestic investors alike. There are no requirements that foreign investors must purchase from local sources, export only a certain percentage of output, or are in any way limited in the foreign exchange related to their exports. No restrictions as to the foreign ownership of industrial land apply (ownership of agricultural land is restricted); however, observers note that the mechanisms for transferring ownership rights is complex and cumbersome.

Ukraine has experience with special or free economic zones. In 2005 the Ukrainian Government canceled all tax exemptions based on allegations of the misuse of these zones for tax evasion and contraband activities.

An example of a privately-funded industrial park established under the new legal framework (Law on Industrial Parks of 2012 discussed below) is the iPARK located near Odessa. The park was developed and is managed by TIS Group of Marine Terminals and offers to tenant companies the combined structures of a major seaport, the advantages of the city of Odessa,

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28 Certain conditions apply based on value of the investment, number of jobs created, and offered salaries
29 Some minor restrictions: for example import duties must be paid if the enterprise sells, transfers, or otherwise disposes of the property; however, in light of the socio-political situation in Ukraine these minor restrictions are justified
30 Foreign companies are restricted from owning agricultural land, manufacturing carrier rockets, and some publishing activities. The Land Code (2001) provides for foreign ownership of non-agricultural land, clarifies the rights of foreign investors, and addresses the right of individuals to own, inherit, buy, and sell land. It classifies land into seven categories based on potential use, including agricultural, industrial, and natural reserve lands.
state-of-the-art industrial, engineering, transport and customs infrastructure, as well as a variety of customs preferences.32

7.5. Legislation on industrial parks

The stated objective of the Law on Industrial Parks of 2012 (LIP) is “creating the legal and organizational framework for creation and functioning of the industrial parks in the territory of Ukraine with the aim of providing economic development and increasing competitiveness of the territories, boosting of investment activities, creation of new jobs, development of modern production and market infrastructure.”

All actions and actors participating in the initiation, development and management of industrial parks defined under LIP are aligned with international best practice and should not confuse potential investors. The LIP, however, defines industrial parks rather broadly allowing for some misconceptions as to the established concepts of industrial parks and science and technology parks. Under the proposed draft amendments to the LIP, an industrial park is defined as “an area identified by the initiator of industrial park according to urban planning documentation and equipped with an appropriate infrastructure where industrial park participants may perform their business activities in the fields of processing industry, scientific research, [emphasis added], information and telecommunication subject to the provisions of this Law and the agreement on business activities within the industrial park” (draft amend. to Art. 1 LIP).

This broader definition provides much needed flexibility to evolve industrial parks into science and technology parks in the future, as well as allows inserting features of technology parks and innovation infrastructure within the planned industrial parks.

LIP also follows international best practice by allowing private sector management of the operation of the parks under a performance based management contract, selected through competitive tender. (Art.4 LIP).

Parks can be created in both public and private lands, and both are eligible to draw upon public incentives. Establishing industrial parks on long-term leased land is possible (Art. 7 LIP) and legal restrictions as to the size of the proposed parks (between 15 ha and 700 ha., Art. 8 LIP) are within the limits observed elsewhere, and allow for economies of scale and industrial concentration typical for such industrial initiatives.

The legal regime becomes more complex in defining the collaboration between state, regional and municipal authorities (Art. 10 (1) LIP); however, the law does not impose restrictions preventing closer collaboration in the process of implementing the law.

Funds generated from the sale of industrial estates to private parties in the course of industrial park creation must be deposited in the state budget (Art. 10(8) LIP), including these generated from the sale of municipal land. This provision may hinder the creation of parks based on municipal initiatives (following the examples of Poland, Hungary and the Czech Republic) and

32 For details see: http://ipark.info/en/index.html
will likely discourage municipalities from engaging financially in park creation and related initiatives. The provision would likely impose a certain level of centralization, a practice which is followed only by few countries around the world. Implementing this provision and achieving the desired economic impact at the regional and local levels, requires strengthening the role of the responsible unit within the Ministry of Economic Development and Trade (MOEDT) to act as a very strong institutional body (following the example of Malta) and equipping the responsible unit within MOEDT with the means and authority to guide local investment in proposed parks and serve as an arbitrator between state, regional and municipal governments.

The legislation follows international best practice in the case of privately-initiated industrial parks: title to land can be freely transferred following the established legal procedures in the country (draft amend. to Art 11.). An interesting feature is closing the round of industrial park creation by introducing the category or “pilot industrial parks”. Government support by law is to be provided only to industrial parks that are listed as pilot initiatives. (draft amend. to Art 14 LIP).

The procedure for establishing industrial parks, specifically obtaining approvals, is more country-specific. A proposed park is approved by the MOEDT in collaboration with other public bodies i.e., the “competent authority means the central executive authority responsible for the formation and implementation of the national investment and national projects policy” (draft amend. to Art. 1 LIP). Under the legally prescribed procedure (defined both in LIP and secondary legislation\textsuperscript{33}), the MOEDT decides to enter an industrial park into the Register of Industrial Parks following the submission of a prescribed set of documentation (defined in Art. 15 and 17 LIP). The MOEDT then submits the documentation provided by the park initiator to the Ministry of Finance (MF) for review (for compliance with Art. 8 and 9 LIP).

The criteria for approval include (i) financial determinants i.e., at least 75% of the financing for the proposed industrial park needs to come from sources other than the government; and (ii) economic development determinates delineating the purpose of the proposed park (in terms of meeting the economic development objectives) i.e., defined business activities, financial and fiscal performance of the proposed park; job creation capabilities for skilled workforce; technology extension capabilities – absorption of state-of-the-art technologies, and (iii) environmental protection determinants as to the development and operation of the proposed park.

Provided that the application meets the requirements set by law, the proposed park is approved and entered into the Register along with comments provided by the Inter-Agency Standing Committee of the MOEDT; otherwise the application is returned for correction and resubmission.\textsuperscript{34} The entry within the Register is published on the website of the MOEDT and the

\textsuperscript{33} Resolution of the Cabinet of Ministers of Ukraine No 216/16.01. 2013 “On approval of the procedure for decision making as to the entry of an industrial park into the register of industrial parks” amended by Resolution of the Cabinet of Ministers of Ukraine No. 430/ 26.06 2015. The resolution provides guidance on the implementation of the provisions of Section 3, Art. 16 of the Law on industrial parks, specifically defining the procedural steps.

\textsuperscript{34} The procedure defines the possibility of silent approval, i.e., if the MF does not issue an opinion within the prescribed term (10 days) the park application is deemed approved.
notice includes information on the name of the proposed park, location, size in hectares, initiator, time period for which the park is set up etc.

The financial determinants i.e. at least 25% self-financing, could not be deemed very attractive. By comparison the rates in other countries (Czech Republic, Slovakia, etc. discussed below) are much lower. However, in light of the financial situation in Ukraine these are fully justified. The Ukrainian Government may wish to consider adopting a more flexible arrangement, where the rate of self-financing is lowered in exchange for greater benefits provided to the local community and the economic development of regions and municipalities.

Current legislation reveals that the proposed parks are to be operated under a performance management contract with a professional company (Art. 18, 21-30 LIP). Secondary legislation\(^{35}\) defines a model agreement, which incorporates by definition the park’s business plan, the decision of its initiator and the concept of the proposed park. It also defines all design and construction works to be undertaken by the company that will manage the park, the services that it will provide to prospective tenants, etc.

Private sector management of the park’s operation is a crucial determinant for success and the corresponding provisions under Ukrainian law follow international best practice. The management company is granted a full range of responsibilities and is subject to guidance from the park’s initiator and tenants within the park (i.e. “participants”). The park manager, based “on instructions from the initiator, participants, obtains permits and approvals from public and municipal authorities, including permits and approvals for construction of production and other facilities required to carry out business activities within the industrial park, represents the participants and appear in licensing authorities, services, enterprises, institutions and organisations” (draft amend. to Art. 25 LIP).

Proposed amendments to the legal framework do not contain any restrictions as to the provenance of the initiators of the proposed industrial parks, or for that matter the tenant companies locating within them: “Land plots may be leased out to citizens and legal entities of Ukraine, aliens and stateless persons, foreign legal entities, international associations and organizations and foreign states.” and the land can be leased for 50 years, and no less than 30 years if the land is publicly-owned (draft amend. to Art. 93 of the Land Code of Ukraine).

The incentive mechanism includes a variety of instruments, including an exception from paying rent for 3 years for the management companies operating industrial parks set up on publicly-owned land. (draft amend. to Art. 93 of the Land Code of Ukraine).

The model agreement lays out in great detail core competencies regarding the development of the parks infrastructure, land ownership arrangements, procedure for attracting prospective tenants, list of assets, reporting arrangements, etc. The model agreement also defines the scientific and technology-related activities to be undertaken within the proposed park, which in effect allows industrial parks to be established as industrial technology parks drawing on

\(^{35}\) Resolution of the Cabinet of Ministers of Ukraine No 216/16.01. 2013 “On approval of the procedure for decision making as to the entry of an industrial park into the register of industrial parks” amended by Resolution of the Cabinet of Ministers of Ukraine No. 430/ 26.06 2015.
scientific expertise to develop innovative products and production processes for industrial application.

The procedure for the competitive selection of managing companies for the proposed parks (Art. 19-20 LIP) is rather cumbersome, applying a “government-style” procurement mechanism, that may not be necessary in all instances. This may prevent attracting park development companies, which act typically also as park managers, to support the initiator in defining the concept and laying-out the plans for creating the proposed park. For example, such a developer would be discouraged to provide technical assistance to the initiator in developing the comprehensive documentation package for approval, if it would be required to participate in a tender at which another company may be selected.

The Government of Ukraine may consider a more flexible arrangement, for example waiving the tendering requirement if a municipality, especially such located in economically underdeveloped or disadvantaged areas, enters into a binding agreement with an experienced park development/park management company to initiate the park, develop it and later on operate it on behalf of the partner municipality.

This shortcoming seems to be remedied by the proposed amendments to LIP, currently under review by Parliament, under which park “initiators, who own the land or have leased the land where the park will be established, are free to select the management company, which will operate the park at their sole discretion.” (draft amend. to Art 18 LIP). A strong recommendation is to clarify whether the concept to be introduced by the amendment would prevail, or both concepts would co-exist in the text of the amended LIP, causing confusion.

The provision allowing for interest free loans for the creation of industrial parks (Art. 34(4) LIP) is a very tricky one, opening a very wide berth for abuse. One could assume that the interest rate would not be the primary issue for obtaining a loan, but rather how this loan would be collateralized. State support should be directed to supporting collateralization in combination with a fee split arrangement on interest levied by commercial banks.

As noted throughout this report, the core determinant for the success of Ukraine’s industrial park program, as well as for achieving the desired economic development impacts and stated policy objectives, is not the legal framework per se but the way it is implemented. The Ukrainian Government may wish to consider tapping into the vast experience of international financial institutions (World Bank, IFC, EBRD etc.) as well as EU financial institutions (EIB, EIF) to design financial instruments that would facilitate transparent and effective lending programs to support the development of industrial parks, as well as related innovation infrastructure (fab labs, incubators, experimental facilities etc.) that may be inserted within the proposed parks.

Allowances contained in the final and transitional provisions to the LIP define core elements of the incentive package. For example the items that may benefit from customs duty exemption

36 Financing obtained through interest free loans may be used to fund activities, especially construction, supply, services, logistics, outside of the parks, which one hand is abuse of the public funds, but more importantly it would give “well-connected” commercial agents a competitive advantage over their peers and impact market competition.
(amend. Art. 287 Customs Code) must not be available in Ukraine: “devices, equipment, components to them and materials, which are not produced in Ukraine”; furthermore the list of items ‘not produced in the Ukraine’ is defined by the Government: “lists of such devices, equipment, components to them and materials shall be approved by the central state body of executive power”.

It appears that the objective of this provision is to incentivize the import of technologies and materials that are new to Ukraine (i.e., promoting technology extension), but could be interpreted also as a form of protectionism. Despite its intentions the requirement may render the entire incentive package obsolete. It imposes a significant administrative burden i.e., continuous market research to determine what devices, equipment, components, materials could be locally sourced in Ukraine, creating lists, approving them, updating those lists.

The Government may consider introducing a mechanism for incentivizing technology extension leveraging the vast experience of other countries and adopting a corresponding guideline for customs officials.

8. Relevant international best practice examples

The Ukrainian framework for establishing industrial parks is reminiscent of the Slovak one. Similarly in Slovakia the development of industrial parks is backed by a special comprehensive law37 and industrial parks are defined as plots of land for industrial production, or service trade, designated in town planning schemes. The core difference is that in Slovakia only the corresponding municipality can act as the founder. The requirements for establishing an industrial park are similar: that the lot is free of encumbrances, easements etc., there are transportation links and available technical infrastructure for the provision of utility services and connection to telecommunication networks, whereby the services are provided to tenant companies by a park supervision company is at market rates.

In Slovakia (like in Ukraine) each industrial park has its own developing company created for the purpose of developing, building and managing the park. The terms and conditions for awarding subsidies for park establishment in Slovakia are also defined by law, but the subsidy from the state budget is provided only to the municipality.

The requirements for receiving such a subsidy in Slovakia include: (i) existence of technical infrastructure on the designated plot and engineering structures necessary for establishing the park; (ii) compensation for the land expropriated for the purpose of the establishing the park has been paid38; and the (iii) costs of purchase or other transfers, lease or exchange of the plots of land designated for establishing the park have been covered.

38 The procedure for transferring a land from the Slovak Land Fund to the founding municipality of an industrial park is defined by law. The Fund and the founding municipality conclude a contract, preferably a contract of land
To obtain the subsidy a municipality in **Slovakia** needs to demonstrate also that: (i) the territory designated for the industrial park is approved by zoning plan of the municipality; (ii) the municipality has secured sufficient funds to cover at least 15% of the costs of procurement and establishment of the industrial park (including the costs of purchase or transfer, lease or exchange of plots of land, the costs of technical infrastructure etc.); and (iii) has concluded a pre-contract with the company that will develop the park and the necessary sources of financing needed for establishing the park are defined in the park’s business plan.

**Table: Evolution of industrial parks’ legislation in the Slovak Republic**

As late as 2001, the Slovak Parliament adopted the Law on Subsidies for the Establishment of Industrial Parks as an amendment to a Law from 1995. Under this amendment only municipalities or regional authorities may be founders of industrial parks within located within their territories and only municipalities may apply for the state support for their establishment. The areas of state support are:

- Support for technical development of the area and engineering structures required for creation of industrial park
- Compensation for expropriation of land parcels required for creation of industrial park
- Reimbursement of costs of purchase or rent or exchange of the land parcels assigned for creation of the industrial park, or reimbursement of costs needed for creation of easement to land, including a costs required for transfer of the land managed by the Slovak Land Fund to the municipality or regional body according to the special law, or reimbursement of rent, or costs of exchange or costs of creation of an easement to that land, and
- Reimbursement of fee for extraction of the land from the Forest Land Fund

The conditions that must be met in order to obtain the state support are:

- The area of the proposed industrial park is determined as land for industrial use in the urban or zoning plan of the municipality,
- The founding municipality is able to cover at least 15% of the total expenses for establishing the proposed park from its own sources,
- The founding municipality and a prospective investor have executed a preliminary contract for the development of the proposed park
- The supply of utility services to the prospective industrial park is secured by binding statements issued by the utility companies

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39 In Ukraine the rate of self-financing is 25%
40 In cases where the establishment of industrial parks is proposed within territories with registered unemployment above 10%, the required co-financing share of the municipality (costs of procurement and establishment) is only 5%. See: See: Lesakova, L: “Establishing Industrial Parks for the Development of the Slovak Economy” 6th International Conference on Management, Enterprise and Benchmarking, Budapest, Hungary (May 2008)
41 See: Act No. 193/2001 Coll.
42 Act No. 180/1995 Coll. on Selected Measures for Land Ownership Settlement
In 2003 the legal framework on industrial parks was amended again, opening the possibility of privatizing the parks by transferring title to land and industrial park infrastructure to individual companies that operate their business within the park. Under the amendment the founding municipality has the right to transfer title of ownership against compensation, which covers the value of the land and the value of the infrastructure as determined by an expert assessment. Municipalities can transfer the whole area of the industrial park or a part of it. The income from the sale is then split between the municipality and the state budget in the proportion of their original contributions.

An additional scheme is defined\textsuperscript{43} for investment support to investors where the property is transferred at a lower price in exchange for benefits for at least 5 years after completing the project.


Because of the similarities, Slovakia is an appropriate example for the Ukraine. The framework for developing industrial parks and zones is similarly codified a main body of the law (the Law on Industrial Parks), it encompasses the entire regulatory regime of the industrial parks and also contains special procedural rules for transfer of land on municipalities or regional authorities. A law on investment support defines the mode of state support, land transfers etc. Compared similar models (i.e., the Czech Republic discussed below) land transfers in Slovakia can be made only to investors that engage in manufacturing and productive activities, and not to private sector developers (as is the case in the Czech Republic).\textsuperscript{44} And it appear that the intent of the Ukrainian lawmaker is similar.

It is enticing to attempt to follow in the success of the Czech Republic. It is however, a difficult example to follow considering the current financial situation in the Ukraine. Nevertheless, Ukraine could learn from the Czech experience with respect to interaction with foreign investors.

The legal framework for establishing industrial parks in the Czech Republic was initiated by Government decree in 2001 and adopted as a special law a year later.\textsuperscript{45} Industrial parks are defined as “determined areas where business, scientific research, industrial production and service activities are performed with special incentives, in view of optimizing the area's human and economic potential.” Parks are established based on a joint venture agreement between public authorities, enterprises, universities, R&D institutes and other interested parties and are managed by companies that hold the industrial park title.

\textsuperscript{44} Observers and legal analysts stress that the possibility of transfer ownership of whole industrial park to some other legal entity, which is not engaged in productive or business activities in within the park (i.e. to developer companies, who are usually specialized also in managing the industrial parks) and restrictions that such companies cannot receive any state support, are the reasons for the vast differences in terms of the economic development of traditionally underdeveloped regions in the Czech and Slovak Republics.
\textsuperscript{45} Government Ordinance 65/2001 on establishing and the functioning of industrial parks, approved with some modifications by Law 490/11 in July of 2002
In the Czech Republic the framework on industrial parks grew organically over time. In the early 1990s some municipalities began considering avenues to address concerns related to problems of unemployment, underinvestment and subsequent emigration from their regions to regions with better working possibilities and living standards. The solution identified in this process of ‘self-discovery’ was to develop infrastructure and provide the necessary support to investors to move their business operations to the municipalities.

The most impressive example of successful municipality engagement comes from the town Vyškov, near Brno. In 1993 the town initiated creation of the industrial zone “Sochorova I” without any support from either the state budget or the private sector. The municipality used 7 ha of land that it owned, purchased another 3 ha and built complex technical and traffic infrastructure. Subsequently, the municipality offered the developed land plots for a sale to prospective investors and the whole area was completely occupied as early as 1998. By this activity the town accumulated some capital because the gains of land sale exceeded cost of the investment. These extra funds and the gained experiences enabled the town of Vyškov to create other industrial parks (“Sochorova II”, “Nouzka I” and “Nouzka II”) and also to provide support to the German company Fritzmeier to regenerate the area of the former “Zbrojovka Vyškov” enterprise – this time with the support of the state.

Source: Šurkala, J.: “Industrial parks and zones in the Czech Republic and the Slovak Republic, the comparative legal analysis.”

Requirements for industrial park creation under **Czech law** include that the land, buildings and utilities infrastructure existing at time of establishment of an industrial park must: (i) have access to a national or European road and connection to the public utilities infrastructure; (ii) have a surface of minimum 10 ha; (iii) the founding joint venture owns or holds rights of use over the land for at least 30 years; (iv) the land is free of any encumbrances; (v) it is not subject of any pending litigations; and (vi) meets the environmental protection and technical standards.

The designation ‘industrial park’ is granted by the Ministry of Administration and Home Affairs and is valid for a period of at least 15 years, based on submission (and subsequent approval by the Ministry) of: (i) a feasibility study confirming the suitability of the land of the proposed park for industrial use, (iii) approval from the local administration for establishing the park’s infrastructure and connection to utilities networks, and (iii) a list of the entities involved in the park’s creation.

This model followed the experiences of municipalities in attracting FDI through the creation of industrial zones from other countries, specifically **Poland** and **Hungary**, where the development of new industrial zones were even more dynamic in 1990s. These ‘municipally-grown’ initiatives influenced the formulation of government policies for supporting the creation of new industrial parks and zones or for revitalization of the old ones.46

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46 In the Slovak Republic the process of creating industrial parks began much later than in the neighbouring Czech Republic, Poland and Hungary. The policy emerged as a in an environment with a strong bias against foreign capital and was supported by very non-standard means, including direct financial support from banks controlled by the state, strong links between politicians and the so-called honourable entrepreneurs “Mečiarovci”, etc. In this
Under the “Program for Industrial Property Development (1998-2005)” the \textbf{Czech Government} provided municipalities, association of municipalities and regional authorities (later also industrial developers and important investors) with significant financial resources or transferred the title to land owned by the state or land managed by the Land Fund of Czech Republic. Entrusted with the implementation of this policy is \textit{Czech Invest}, established in 1992. The development of industrial infrastructure started much later in 1998, based on a special legal regime\textsuperscript{47} defining the areas and extent of state support.

It is very important to note that under the \textbf{Czech} industrial park development program\textsuperscript{48} state support is granted only to proposed industrial parks connected to an investor who, either has already obtained investment stimulus (under the Law on Investment Stimulus), or alternatively is considered to be engaged in implementing a “strategic project”. This original regulatory regime, and its subsequent amendments, codified in the Law on Investment Stimulus, delineated state support as: (i) discount on corporate taxes; (ii) transfer of technically developed land for a more favorable price; (iii) financial support for the creation of new employment opportunities; (iv) financial support for requalification, skills upgrading or training of employees; (v) transfer of land listed in the Cadaster as agricultural land (or transfer of other land for prices defined by law).\textsuperscript{49}

Industrial parks in the \textbf{Czech Republic} were developed within the framework of the subprogram “development of industrial zones”, which dedicated significant financial support for the creation of new industrial areas (so-called “green-fields”) with completed infrastructure. Under this subprogram, a municipality, an association of municipalities, a regional authority or a developer could obtain a financial incentive (determined under a ‘costs gap’ mechanism). The share of state support in total costs was on average 46\%, sometimes even more i.e. under a preference for under-developed regions (75\%), or 100\% support under a preference for “strategic industrial zones”.

In this manner the \textbf{Czech Republic} – based on massive public financial support and very strong engagement of the public authorities – developed exemplary industrial parks and created a vibrant market for industrial land, now fully operated by private sector developers.\textsuperscript{50}

\footnotesize{manner Slovakia attracted few foreign investments, and prospective investors rather built their factories somewhere else

\textsuperscript{47} Government decree No. 298/98 Coll.

\textsuperscript{48} Between 1998 and 2006 there were supported 96 industrial zones were supported under the program. See: Šoltys, J.: “History and present of industrial zones in Czech Republic – expectations of redevelopment.” Brno, Czech Republic (2008)

\textsuperscript{49} Land transfer has been complicated by pending restitution claims; however, land has been transfer under the claim of ‘emergencies’ where developers complete construction activities based on predefined requirements and documentation, based on the legal regime established under another law. This fragmentation of the regulatory regime was associated with significant level of legal uncertainties, which have not been resolved due to lacking political consensus on some delicate issues, for example restitution of church land etc.

\textsuperscript{50} Exceptions include projects for the regeneration of abandoned former industrial areas (brown-fields) designated as “strategic industrial zones”. See: Soltys, J.: “History and present of industrial zones in Czech Republic – expectations of redevelopment.” Brno, Czech Republic (2008)
Comparing it to the Slovak model, the general legal procedure in the Czech Republic is not as flexible. On the other hand; however, the Czech Law on Investment Stimulus provided an exceptional level of flexibility in terms of recipients of state support. This law allowed the state to direct support also to private sector developers, as well as multinational corporations, wishing to develop industrial parks in places, where it is not commercially viable. This has been complimented by the absence of excessive obstacles in transferring a land from public authorities to private entities.

And in this context, the Czech model, despite its proven successes, is inapplicable to the situation in the Ukraine, especially considering current financial state of the country and the ongoing depletion of resources caused by armed conflict raging in eastern Ukraine. That being said, Ukraine may wish to consider initiating a heavily-subsidized industrial park program following in the footsteps of the Czech Republic, provided it could draw on donor funding provided by international financial institutions such as the World Bank, or European Union funding.

Ukraine could learn from the negative experience of Romania with respect to establishing industrial-technology parks. Compared to Ukraine, Romanian legislation on industrial parks is by no means comprehensive and the elements to support the creation of such parks (eases, assistance) are rather limited. Romanian legislation lacks a strict separation between the concepts of “industrial parks” and “technology parks.” It appears the Romanian legislator overextended the meaning with the intention to insert technology park features within the industrial park category. It appears that the intentions of the Ukrainian lawmakers are similar.

It is important to note here that the targeted occupants of science and technology parks are predominantly micro and small enterprises and they are usually smaller; while industrial parks benefit from economies of scale and are successful when cohosting large multinational companies and their local suppliers.

The approach taken in Romania reveals certain problematic issues: a hybrid industrial-technology park, especially when successful, cannot encourage multiplication because of the unique relations created between the tenant companies (i.e., the research and business communities). Successful models for industrial parks, on the other hand, could be replicated elsewhere; also the social implications that industrial projects produce (i.e., increased employment, upgrading the skillsets of the local workforce, insertion of local companies into global value chains, knowledge and technology extension to local companies etc.) are very different from these generated by science and technology parks: i.e., promoting knowledge-based entrepreneurship, fostering disruptive innovation and creating new markets based on technologies transferred from the research world to industrial enterprises.

A third and crucial issue is that even if the legal means to encourage industrial parks is more detailed and cumbersome than those required to establish science and technology parks,

51 Ukraine has separate legislation governing the establishment of technology parks, however, the industrial park regime allows the insertion within industrial parks of features typical for science and technology parks, namely scientific research activities.
developers usually shy away from science and technology parks as these typically yield results after a longer period of operation, sometimes decades, and sometimes never.

In this context, the Ukrainian Government may consider following the example of China from the late 1980s\(^\text{52}\) in establishing industrial parks, then gradually transforming some of them into science technology parks based on research-industry collaboration patterns.

Another alternative to co-mingle the industrial estate and research park functions within the same space would be inserting innovation infrastructure and within industrial parks (discussed further in this report).

An example for establishing industrial parks with a strong regional focus comes from Italy. The country has, in addition to legislation at the national level, some region-specific rules intended to promote industrial areas.\(^\text{53}\) An interesting feature of the Italian framework on industrial parks and economic zones is the concept of industrial areas management delegated to the regional level under a special Law on Industrial Districts.\(^\text{54}\) In Italy industry parks are planned and developed by the corresponding municipality, while provincial and regional authorities only provide the necessary support. As a general comment, Italian legislation, both at the national and regional levels, does not regulate industrial parks in detail.

Ukraine could follow the example of Greece in creating Sustainable Industrial Parks (or Eco-Industrial Parks) and parks geared towards micro and small enterprises. The Greek framework is modeled after the sustainable industrial parks concept implemented in Denmark, which offers the best case example on how to plan and develop industrial parks based on regional synergies. The Greek legal framework on industrial parks also heavily promotes the establishment of Industrial and Business Estates – an advanced form of industrial parks, with a focus on light industry parks geared toward SMEs and establishing a specific type of technology parks (e.g. Technopolis).

The focus on establishing region-specific industrial parks is followed also in Spain, which in a special law from 2005\(^\text{55}\) regulates the establishment of settlement of the industrial areas at the regional level. The Spanish experience could be used by the Ukrainian Government in designing a model for coordinating efforts at the state and regional government levels. In Spain, as it is envisioned under the corresponding Ukrainian legislation, industrial parks are planned locally but based on urban planning tools defined in national level legislation: these define in detail the

\(^{52}\) For details see: Tai-Ming Ben: “Interaction Analysis among Industrial Parks, Innovation Input, and Urban Production Efficiency.” Asian Social Science Vol. 7, No. 5; (May 2011

\(^{53}\) Some regions have comprehensive region-specific rules, i.e., Tuscany, Emilia Romagna, Marche; other do not i.e., Friuli, Venezia, Giulia, the district of Lazio. Interestingly in the most developed industrial region, Lombardia, few actions have been taken to regulate industrial parks. In Sicily regional rules for developing and managing an industrial areas are mandatory. For details on the legal frameworks in Italy, Greece, France, Spain, Malta and Bosnia and Herzegovina provided in this subsection, see: Report: “SWOT Analysis on Sustainable Industrial Areas in each partner country”, MEDI, European Regional Development Fund, Brussels, Belgium.

\(^{54}\) Law Nr. 317 of October 1991

\(^{55}\) Regional Urbanism Act 16/2005
procedure of selection of the site of the industrial park based on available infrastructure, proximity to residential areas, previous existence with industrial initiatives at the location etc.

Ukraine could also leverage the experience of France in facilitating the public-private dialogue. France has a very comprehensive framework on planning and establishing industrial parks that has been amended numerous times to facilitate dialogue between public institutions and private developers. The intent of the French lawmakers is to impose to any new industrial parks/areas (e.g. Joint Development Zones), a preparatory study regarding the feasibility for creating new networks of local companies (clustering) or extending existing company networks.

Provided the Ukrainian Government wishes to explore avenues to strengthen the role of MOEDT, it could follow the example of Malta; a country with an institutional body with very broad authorities, tasked with industrial park development, responsible for developing all related legislation and procedures, strategic planning, as well as the guiding operational aspects.

Examples from Bosnia and Herzegovina may be useful for Ukraine in setting up a shared processes for spatial and urban planning related to industrial area that includes stakeholders from the national and regional levels.

8.1. Recommendation

The highlighted experiences from other countries may be relevant for Ukraine. To summarize, the formal consistency of the adopted legislation, as in the case of Slovakia, helps avoid the ambiguity of fragmented legislation, as it the Czech Republic for example. However, the Czech framework, while more fragmented in different normative acts with different legal force, opens more options for industrial park development because of its very flexible administrative practices.

The Ukrainian Government may consider defining only essential legal requirements by law, as the country is in a situation where optimal standards are hard to predict because of sustainability concerns, and rely on implementation through very strong supporting institutions (following the examples of the Czech and Slovak Republics, France or even Malta) that could manage administrative procedures in a more open, professional and responsible manner.

Also, the Ukrainian Government may consider encouraging the creation of industrial parks with a strong regional focus (following the examples of Italy and Spain) and introduce models for collaboration between regional and state authorities (France, Bosnia and Herzegovina); could consider designing industrial parks targeting micro and small enterprises (Greece), but most of all must introduce a model for sustainable collaboration with private sector companies, both potential tenants in industrial parks, as well as park developer and management companies.

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56 Planning of industrial zones is driven by Malta Enterprise and Malta Industrial Parks Ltd.
A very strong recommendation is to institutionalize a framework for public consultations, involving all interested parties from the private sector, research, and foreign investors, to form the national consensus on the path for achieving the country’s economic policy objectives.
9. Models for establishing industrial parks

Industrial parks are one of the modern economic development phenomena used more and more by business entities, municipalities and regions around the world. This development is particularly influenced by structural reforms and production spheres affected by ever stronger competitive pressures within the constantly changing global markets. It is particularly evident in post-communist transition countries such as Ukraine, where previous production and the industrial structures fell apart, leaving behind empty or partially empty industrial sites. Existing industrial zones, in terms of empty factory buildings are not at all attractive, despite the undeniable advantages of existing pre-prepared technical infrastructure.

The lack of domestic financial resources reveal that economic growth, structural changes and the implementation of development goals can only be achieved with the participation of foreign funds and foreign capital. In this context, Ukraine, its municipalities and regions can only offer suitable investment opportunities to foreign investors and hope that they would come.

There are two basic models that drive the development of industrial parks. The first is economic development, i.e., the government of a country or a region decides that initiating a park will develop its economy. The second model is purely commercial one, where the establishment of an industrial park is undertaken by the private sector for profit.

It is debatable which of these two models is more appropriate. This needs to be determined based on the particular benefits and drawbacks associated with these two options. For example, governments act faster: when governments are active in promoting the economic development of a region they establish industrial parks, provide buildings in advance of demand so that investors know they can move into a building quickly. Operational maintenance is provided by the state directly or by the municipality. However, it goes without a question that the state leadership on industrial parks is associated with a greater strain on public finances.

International experience indicates that industrial or technology parks under state or municipal management are in general more inefficient compared to their privately-operated counterparts. This is because construction and maintenance is expensive and over time, unless the particular state/region or municipality is wealthy, the infrastructure degrades due to poor maintenance and lack of upgrades.

To avoid this scenario, governments encourage the private sector to build and maintain industrial parks. The downside to this commercial model is that the private sector is primarily interested in commercial opportunities and will not locate where there is no commercial return, despite all possible incentives or encouragements by the government. The other downside – a rather significant one – is that the private sector as a general rule would not engage in construction ahead of demand. In essence, the commercial model is signified by a

mode of responding rather than anticipating demand. And private developers reflect on market demand on the locations they wish to develop rather than those the state would like to prioritize. In this context, privately established industrial parks are slower to come into existence, even if it is proven that they are more efficient and more sustainable in the long run.

The third option is to build on the strengths of both models. A public-private partnership is a partial solution to some of the drawbacks that exist in commercial or state driven investment. Under such schemes, the state is the provider of the site and of services up to the perimeter of the site of the industrial park, whereas a private developer provides the other functions at market-based rates. Sometimes, governments provide financial subsidies to the developers to encourage the faster establishment of the park, or to speed-up is full operational capability.

An important feature of the public-private partnership model is that it provides an acceptable risk-sharing proposition to both partners. When governments take full advantage of the capacities of their investment promotion agencies to promote the parks in the international market place, and in this manner attract anchor tenants, large multinationals etc., they relieve the private sector from this expensive function. This is achieved through various government-managed initiatives, such as supplier development programs, providing special incentives for large investments with the potential for significant positive economic impact and job creation etc., measures possible under the current legal framework in Ukraine.

9.1. Established by public bodies

Industrial parks managed by a public authority (a municipality, a regional authority or a state) is one of the tools of public policy implementation for rather developed industrial areas. The idea is that a public authority invests some financial sources and convenient land, resolves the complicated ownership structures within this area in an attempt to attract investments. Then the public body offers the developed industrial estate for sale or rent and makes the estate more attractive by providing some additional services to investors, either for free or for a symbolic fee. 58 This model has been very successful in post-communist transition countries such as Poland, Hungary, and the Czech and Slovak Republics; and has proven very effective in Israel.

In terms of applicable business model, the public investments to industrial areas are not profit-orientated. In some situations profit is even not possible at all (specifically in regions without sufficient transport infrastructure).

In such cases the government provides substantial subsidies in order to obtain benefits such as increased employment or development of a territorial unit. It is not a model that Ukraine could

58 There is also an approach defined by a strategy of a permanent engagement of the public authority in the project. Defenders of such approach usually underline that the public authority should not put out of its hands the valuable asset and try to accumulate a profit by renting. They also stress the importance of direct public control, because sometimes private investors lack of motivation to re-introduce a production or simply sell-off the land for profit.
implement in the current situation, unless the Government secures long-lasting commitments and support from international donors and international financial institutions that prioritize Ukraine’s economic development.

9.2. Established by the private sector

Typically, industrial parks and zones managed by a private entity start to appear rather spontaneously in an already created market. The investor, usually specialized in building and managing industrial properties, acquires suitable land in a good location, ensures that all necessary legal requirements are fulfilled, builds basic infrastructure and attracts investors (concrete producers).

This business model provides for two options: sell land plots to investors for profit (made through the difference between costs of the land and the infrastructure and final costs of developed land plots suitable for building industrial property); or, alternatively lease parts of the land to concrete investors, or even cooperate with them in the construction of industrial buildings, provision of services, etc.

This model is very prevalent in the United States and very developed countries in Western Europe. It would be suitable for Ukraine; however; it is debatable whether the country could attract such form of investment under the current circumstances. In any event, it is not impossible – strategic investors could be drawn by the relatively low cost of labor and land, also by certain externalities created by means of supplier development programs, programs to attract strategic investment, providing innovation infrastructure at subsidized rates, linkages to regional clusters, research institutions etc.

Slovakia, a country with a legal framework on industrial parks similar to that enacted in the Ukraine provides multiple positive examples on industrial parks build by investors. As a matter of fact, the fastest growth trend in Slovakia are industrial parks established by foreign investors. Under such a scheme, a large investor establishes the park and influences other companies, typically its local suppliers, to locate their business within it. Examples include: IP Záhorie (large investor Volkswagen), IP Poprad Matejovce (large investor Whirlpool), and IP Kechnec (large investors Molex, Gilbos), IP Žilina (large investor KIA), IP Trnava (large investor Citroen-Peugeot).

Slovakia offers positive examples also with respect to “brown parks”, established in the facilities of former socialist companies. For example, IP Humenné is located in the former facility of the Chemos Company and five international companies are located within this park, employing over 3 000 people. Another example is the industrial zone Strazske. Both facilities

59 The Slovak experience with private industrial parks is modest, but successful. Such industrial parks have been set-up mainly by foreign developers represented by influential consortiums. The most successful parks of this type include IP Vrable (developed by German developer IGP Vrable), IP Sladkovicovo (developed by Italian developer K.L.E. Group), and IP Devinska Nová Ves (developer J&TGlobal). It is important to note that all of those parks are located in Western Slovakia, close to the Austrian and Czech borders.
have brown (existing but vacant facilities) and green (undeveloped land) areas available for expansion.

Slovakia also established industrial parks based on heavy Government support and subsidies (the model discussed above). A corresponding lesson for Ukraine is that the existence of publicly-funded industrial parks has a positive effect on the establishment of privately-funded ones.

9.3. Established through public-private partnership

In implementing the industrial park program, the Ukrainian Government may wish to explore an aggressive use of public-private partnerships (PPP), especially considering the present economic situation of Ukraine and the Government’s desire to accelerate investments while retaining budgetary discipline.

While private entrepreneurs perceive an industrial park as a lucrative real estate investment, the state and regional governments and affected municipalities see the strategic importance of the industrial parks in promoting economic growth, increasing employment, knowledge and technology transfer etc. Yet PPPs are very difficult to implement considering the rudimentary level of experience with such instruments in Ukraine, especially at the municipal level.61

9.3.1. Rationale for aggressive use of PPP instruments

Broadly defined, PPPs include various types of cooperation between public and private actors to deliver public or semi-public services. A narrower definition of PPPs is focused on the manner of delivering and funding public services and how an asset is used, how the risks are shared between the public and private partners, etc. In essence a PPP is a long-term agreement between the government and a private partner where the service delivery objectives of the government are aligned with the profit objectives of the private partner.62

PPPs have been used successfully for decades in the United States as a means to reduce the operating budgets of public authorities by turning operations and maintenance over to private companies. The European Union experience is different. Despite dedicated policies to promote PPPs,63 many EU countries very have limited experience with related instruments and PPPs represent a rather insignificant part of total public investment.64

60 Green-field parks are established on a “green lawn” i.e., undeveloped area suitable for expansion.
64 According to a global survey by Siemens in 2007, PPPs only account for about 4% of all public sector investment in the EU. For details see: EC COM (2009) 615 final.
The limited EU experience, however, demonstrates that PPPs have been instrumental in improving the delivery of projects (e.g. on-time\(^65\), on-budget\(^66\) delivery); providing better value for money from infrastructure;\(^67\) reducing immediate pressures on public sector budgets; supporting the completion of large infrastructure projects by spreading the costs over the lifetime of the asset; improving risk sharing\(^68\) between public and private parties; and in boosting innovation and R&D efforts (e.g. the private sector leverages innovative hardware, systems or production processes to retain a competitive edge).\(^69\)

Global experience also shows that leveraging PPPs, pushes the private sector to the forefront of developing and implementing long-term strategies for industrial programs (for example through Build, Operate and Transfer (BOT) and service concessions). One of the core features of PPPs, in the context of Ukraine’s industrial park program, is that PPPs would allow a pooling of private funds with the rather limited public resources to achieve the Government’s objectives.

### 9.3.2. PPPs in the context of Ukraine’s industrial parks program

The transfer of risk in implementing the program from the Government to a private sector partner through PPPs is probably one of the most pressing issues in the Ukrainian context.\(^70\) This is because in the PPP, the public authority is the partner that specifies the quality and quantity of the service required from the private sector partner. And under such an arrangement the private partner is tasked with the design, construction financing, operation and management of the asset that would be created, as well as with delivery of a service to the government or to the public using that asset. In this context, the capacity of the public authority to define and guide the private party is a crucial success factor. A number of conditions need to be in place.

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\(^65\) The overall better performance of PPP vis a vis conventional procurement in respect of on budget (65 %) and on-time delivery (69 %). When costs over-run were incurred, they were caused by the authority or third party requests in 90 % of cases. In addition, 91 % of completed projects were rated by key users as very or fairly good in term of construction quality and design. See: “PFI construction performance report” National Audit Office, UK (2009); cited in EC COM (2009) 615 final


\(^67\) A global study of 2009 on the impact of private sector participation in water and electricity distribution shows that the private sector delivers on expectations of higher labour productivity and operational efficiency [http://www.ppiaf.org/content/view/480/485/](http://www.ppiaf.org/content/view/480/485/). cited in EC COM (2009) 615 final

\(^68\) Risk sharing arrangements within PPP provide an instrument to create incentives for both parties to increase efficiency of the project.


\(^70\) Envisaged here are concerns voiced by multiple observers (e.g. U.S. State Department, OECD, EBRD etc.) related to the capacity of public authorities in the Ukraine to design and implement industrial parks, exposures to corruption pressures, captivity of the public officials by oligarchic commercial interests etc.
Table: Key challenges for developing public-private partnerships

<table>
<thead>
<tr>
<th>Challenges</th>
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<tr>
<td>PPPs are complex instruments which require a number of government capacities. These involve setting up a robust system of assessing value for money using a prudent public sector comparator and transparent and consistent guidelines regarding non-quantifiable elements in the value for money judgement. The public authorities must also be able to classify, measure, and allocate risk to the party best able to manage it and to adhere to sound accounting and budgeting practices.</td>
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<td>The starting point for assessing the desirability of a PPP is the public sector comparator, a comparison of the net present cost of bids for the PPP project against the most efficient form of delivery according to a traditionally procured public-sector reference project. The comparator takes into account the risks that are transferable to a probable private party, and those risks that will be retained by the government. Thus, the public sector comparator serves as a hypothetical risk-adjusted cost of public delivery of the project. The evaluation encompasses qualitative aspects that involve an element of judgement on the part of government. The question is what the government judges to be an optimal combination of quantity, quality, features and price (i.e. cost), expected (sometimes, but not always, calculated) over the whole of the project’s lifetime. It ultimately depends, then, on a combination of factors working together, such as risk transfer, output-based specifications, performance measurement and incentives, competition in and for the market, private sector management expertise and the benefits for end users and society as a whole.</td>
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<td>The second challenge is risk management. To ensure that the private partner operates efficiently and in the public interest, a sufficient, but also appropriate, amount of risk needs to be transferred. In principle, risk should be carried by the party best able to manage it. In this context, “best” means the party able to manage the risk at least cost. This may mean developing public-private partnerships to deal with the results of realized risk (ex post risk management). However, not all risks can be managed and cases may exist where one or more parties to a contract are unable to manage a risk. To those parties, such unmanageable risks are exogenous risks (an example is uninsurable force majeure risk that affects all parties, while political and taxation risk is exogenous to the private party and endogenous to government).</td>
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<td>The third key issue is affordability. A project is affordable if government expenditure associated with a project (whether or not it is a PPP) can be accommodated within the intertemporal budget constraint of the government. A PPP can make a project affordable if it results in increased efficiency that causes a project that did not fit into an intertemporal budget constraint of the government under traditional public procurement to do so with a PPP. It can be tempting to ignore the affordability issue where PPPs are off budget, but this is very unwise. Using PPPs also reduces spending flexibility, and thus potentially allocative efficiency, as spending is locked in for a number of years. Given that capital spending in national budgets are often accounted for as expenditure only when the investment outlay actually occurs, taking the PPP route allows a government to initiate the same amount of investments in one year while recording less expenditure for that same year. However, the obligation to pay over time will increase expenditures in the future, reducing the scope for new investment in coming years.</td>
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Using PPP instruments to develop the planned industrial parks in Ukraine implies that the private party is should be fully responsible for the project implementation; use of joint capital...
investments (private party, state/regional government and/or municipality); ensuring an even distribution of commercial risk; shared ownership of assets; implementing a mechanism for income distribution based on a proposed scheme of capital investment and current funding for the site, taking into consideration the economic goals of the participation.

9.3.3. Ukrainian legislation on public private partnerships

Ukraine adopted legislation on production-sharing agreements in the late 1990s and the law “On Public-Private Partnerships” in 2010, along with further legislation concerning public-private co-operation. Observers note several deficiencies in terms of developing PPP investments, particularly at the regional and local levels.

The greater use of PPPs in Ukraine depends on the rate of improvement of the overall business climate of the country. Basically, one could argue that PPP opportunities in Ukraine may not be attractive to investors in a business environment defined by legal, institutional and policy uncertainty. Also using PPPs in a country with noted high levels of corruption and captivity of the public service could potentially increase corruption pressures.

Despite some favorable assessments of the PPP law, experts note that the complexity of Ukrainian legislation is an obstacle for implementing PPPs, including that some provisions of the PPP law are not enforceable due to absence of a necessary enforcement mechanism or because they contradict to specific norms provided for by other specific legislation.

9.3.4. Advantages to traditional Government procurement methods

The PPP model offers significant advantages over traditional public procurement in terms of efficiency, service quality and value for money. Australia, Canada, Japan, China, Peru have all

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71 Affordability concerns are associated with the discount rate – the higher the investor’s discount rate, the more expensive the PPP to the public authorities. This is directly influenced by the degree of uncertainty confronting investors


73 There is much discussion in Ukraine on the technical legal aspects of PPPs and there are numerous proposals for amending both the PPP law and other legislation in order to clarify matters and make PPPs easier to pursue. For details see: OECD “Territorial Reviews: Ukraine 2013”, OECD Publishing (2014), http://dx.doi.org/10.1787/9789264204836-en


75 Ukraine’s PPP Law is a framework law, which rather than asserting the prevailing force of its provisions, refers interested parties to other laws for rules and regulations. A number of sector specific legislative acts were adopted (e.g.: concession and lease of water supply, sewage and central heating infrastructure, mining concessions, concession of motor roads, etc.) which introduced an additional layer of regulation. Therefore, potential investors usually need to refer to numerous legislative acts and various decisions of responsible self-governing authorities which regulate PPP on the local level. For details see: “Ukraine: Assessment of the quality of PPP legislation and the effectiveness of its implementation” EBRD (2011)
reported significant cost savings by applying various PPP methods in implementing large infrastructure projects.\footnote{For details on examples provided from Asia-Pacific countries please see: “Infrastructure Public-Private Partnership Case Studies of APEC Member Economies.” Asia Pacific Economic Cooperation (APEC), 21st Finance Ministers’ Meeting Beijing, China 21-22 October 2014}

Positive examples come from \textit{Australia} where bids for a road, water and rail infrastructure projects were evaluated against public sector comparators (estimate of the risk adjusted, whole of life cost of the project if alternatively delivered by the government rather than through PPP) and the preferred private sector partners offered bids lower than the public sector comparator by 1\%, 14.1\%, and 30\% respectively.

\textit{Canada} carried out value-for-money assessments throughout the procurement process to estimate value savings which consistently demonstrated that the PPP approach provided a lower overall net present costs compared to the traditional government procurement methods. Similarly, \textit{Peru} used value-for-money analysis to make a decision to implement a large infrastructure project (mass transport) via PPP; while \textit{Chinese} experience revealed tangible efficiency gains afforded by PPPs in municipal infrastructure projects.

\textbf{9.3.5. Enabling private sector participation}

The mode of public partner participation is essential to encourage private sector interest, particularly in large, complex infrastructure projects such as industrial parks. The experiences of \textit{Indonesia} and \textit{Chile} showed that the private sector is more likely to invest in large infrastructure projects with the Government as their enabling partner because the risks associated with these types of projects are oftentimes too high for the private sector to bear on its own.

In \textit{Chile}, the government provided guarantees (minimum income) to increase the financial viability of proposed PPP projects. \textit{Thailand}, on the other hand, had an interesting experience with a container terminal/industrial zone, where the Government stepped in to manage demand risks in the face of strong competition among port operators, which drove prices down and adversely impacted revenues.

Experience from \textit{Russia}, shows a model for risk mitigation in large infrastructure projects (expansion of Pulkovo airport), where developing expensive infrastructure (e.g., parking lots and access roads) was bid out as a 30-year PPP modality and the private partner/concessionaire was fully responsible for the construction, financing and subsequently maintenance.

In the \textit{United States}, the government adopted an availability payments scheme to lower the credit risks of the private concessionaires of large transportation infrastructure.\footnote{The U.S. Transportation Infrastructure Finance and Innovation Act (TIFIA) encouraged lending by commercial banks and the allowed much faster target completion of large infrastructure projects through PPP compared to projects wholly financed by the government.} In \textit{China}, the Shanghai municipal government adopted special regulations to encourage private sector’s
participation in infrastructure construction and operation by way of concession. The path of adopting special PPP regimes designed to promote investments in infrastructure at the local level has been followed also by Mexico, Australia and Korea where relevant legislation provides for a proper distribution of risks between the municipal and private actors, transparency and accountability and legal certainty to private partners involved in the projects.

### 9.3.6. Examples of establishing industrial parks through PPP

The experience from countries across the globe reveals that industrial park establishment under a PPP scheme is typically led and initiated at the municipal level.

**China** has successfully leveraged PPP methods to address financing gaps in developing industrial infrastructure dedicated to national economic and social development. In a recent example from 2011, the Shanghai municipality adopted a special regulation to encourage private sector participation in infrastructure construction and operation that helped develop the Xin Zhuang Industrial Park. The PPP modality used was “Design-Build-Finance-Operate, where the private partner (the Huadian Corporation), was granted the concession to provide public goods and services and centralized heating and cooling to local companies, and the China CDM Fund provided concessional loans as viability gap funding so that the project could also leverage loan financing provided by commercial banks.

**In Slovakia,** the city of Trnava, leveraged its automotive clusters program to establish an Industrial and Technological City Park using a PPP modality in collaboration with local SMEs (part of the cluster). Several examples come from **Ireland:** the Grange Castle Business Park was developed by the local municipality in collaboration with a private sector company that later was entrusted with the management and maintenance of the park; Citywest was developed by the municipality in collaboration with a private partner responsible management and operation, as well as for providing state-of-the-art communications links (which led to the subsequent designation as the National Digital Park by the Irish Government).

**A recent example from the United States** is the creation of the Boston Marine Industrial Park, established in partnership between the Boston Re-development Authority and private partner.

**In Poland,** the Podlaski Industrial Park was developed at the site of a closed down agricultural

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78 I.e., Administrative Measures of the Shanghai Municipality on the Concession of Urban Infrastructure
79 For details on the inception, financing, implementation and lessons-learned from the Xinzhuang Industrial Park project please see: “Infrastructure Public-Private Partnership Case Studies of APEC Member Economies.” Asia Pacific Economic Cooperation (APEC) Beijing, China (2014)
81 Other parks established based on collaboration with private sector actors include the National Technology Park Limerick (multinational subsidiaries, Irish technology companies, Innovation works, R&D companies and the University of Limerick) and the Shannon Free Zone, which has become a model on which many of the world’s Free Zones have been developed.
equipment factory and the PPP arrangement between the municipality and private partners supported building energy supply, water supply & sewage infrastructure and roads.\textsuperscript{83}

There are numerous examples of industrial parks established leveraging PPP models from countries across the world as diverse as \textbf{India} (multiple parks in Andra Pradesh, Gujarat etc.), \textbf{Turkey} (Bursa Industrial Park) or \textbf{Zimbabwe} (Willowvale Industrial Park).

\textbf{9.4. Recommendation}

In implementing the industrial parks program, the Ukrainian Government may consider selecting competing investment priorities, especially such that could be implemented using potential PPPs, based on a procurement option pre-test which would reveal the ‘value for money’ of each option.\textsuperscript{84} That would include comparing projected costs, benefits and most of all risks associated with creating industrial parks via PPP or through traditional Government procurement methods.

Despite its apparent benefits, PPPs need not be pursued in any case. In deciding how to secure the necessary investments to implement the industrial parks program, the Ukrainian Government may consider transferring the risks associated with program implementation to the party with the greatest capacity to manage these risks.\textsuperscript{85} The leading concern, however, is the ability of the public partner (state/ government/ municipal) to define, identify and be capable of measuring the risks that the implementing entity would need to address (including a private party). The Ukrainian Government may consider giving priority to the entity (public or private) that would bear the least risk-prevention cost or alternatively the entity, which would be stuck with the least costs if the risks cannot be avoided.

\textsuperscript{83} See: http://www.ppp.czarnabialostocka.pl/en/project.html
\textsuperscript{84} It should be noted that the OECD strongly recommends that there must be no institutional, procedural or accounting bias either in favor of or against PPPs
\textsuperscript{85} Governments transfer risks associated with efficient and effective implementation, assumed by the private partner under certain conditions. Typical risk mitigation clauses in PPP agreements include (a) safeguards in cases of changes in government policy or adoption/amendment of legal provisions to mitigate the exposure of the private partner with respect to unanticipated financial risks or delays in project implementation, (b) government guarantees to ensure the fulfillment of its obligations, and (c) regulatory risk guarantees, where the government undertakes to compensate the private sector partner in the event that pre-agreed rate increases are not implemented for reasons not dependent/influenced by the private partner.
10. Supplier development program

The Ukrainian Government may consider introducing supplier development programs to increase the occupancy of the planned parks, as well as to use such programs to promote technology and knowledge extension, upgrade the skills of the local workforce, improve the global competitiveness of local suppliers etc.

Supplier development is described in different ways but a more encompassing definition is: “a long-term cooperative strategy initiated by a buying organization to enhance a supplier’s performance and/or capabilities so that a supplier is able to meet the buying organization's supply needs in more effective and reliable way which will give additional competitive advantage to buyer to become more competitive in market”.

Supplier development programs have been used successfully in many countries as a means to increase foreign direct investment (FDI) by large multinational companies, as well as to improve the capacity, competence and capability of local firms acting as suppliers to such multinationals.

Apart from increased revenues and employment, such programs have been instrumental in enhancing the competitiveness of local companies and helped them move-up into the higher value-added segment of the supply chain, in which they operate, or to enter other new markets altogether.

The popularity of supplier development programs reflects an increasing recognition that policies for the attraction of foreign investment must be accompanied by policies for its retention and long-term embedding in regional economies. Governments also realize that the economic impact of the activities of the subcontracted local suppliers of the foreign company is usually greater than that of the foreign investor itself. This is because the use of local suppliers not only increases local employment and the skill sets of the local workforce, but it also leads to technology transfer and improved capital provision for local SMEs.

A corresponding program is initiated by performing concurrent external and self-assessments of local companies that could be potential suppliers to large foreign companies; using standard models or the supplier audit methodologies of the foreign company. A business improvement plan is developed based on these assessments, and the local companies are introduced to foreign manufacturers, potential customers and partners.

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86 As a “A long-term cooperative effort between a buying firm and its suppliers to upgrade the supplier's technical, quality, delivery and cost capabilities and to foster ongoing improvements. Watts and Hahn (1993)”, as well as a short-term or goal oriented relationship, i.e.: “Any activity a buyer undertakes to improve a supplier’s performance and/or capabilities to meet the buyer’s short-term or long-term supply needs”. For detailed discussion see: Chavhan, R., Mahajan, S.K., Joshi Sarang, J.: “Supplier Development: Theories and Practices” IOSR Journal of Mechanical and Civil Engineering (Sep-Oct. 2012)

87 For details see: Potter, J.: “Embedding Foreign Direct Investment” OECD 2001

88 In developing and transition countries the necessary improvements are made with technical and financial support provided by the Government or the donor community
10.1. Approaches

Supplier development programs are often based on an interventionist approach. In many countries, such as Trinidad and Tobago, Nigeria, Brazil, Malaysia; foreign companies are required to contract local firms, which has proved effective in many ways, but because using local contractors is mandatory, supplier output is typically centered on the immediate needs of the foreign investor in the particular market, which prevents the local supplier to develop transferable skills and capacities to access other markets.

Another approach is to engage consultants or government agencies to enhance the technical skills, managerial competence and financial knowledge of locals SMEs to become suppliers of large multinationals. The United Kingdom is an example of this approach, where the Business Link network was used to deliver training and consultancy to smaller enterprises. Similar programs are run throughout the EU and are supported by networking events such as Regional Promotion and Trade Fairs. It is important to note here that this approach has not yielded the expected results, mostly because SMEs are not aware of their capacity development needs; it has also proven to be a very costly approach with no clear indication as to the effectiveness of the public funds used to support it.

A hybrid approach to implementing supplier development is used in Costa Rica. This approach relies on a public body, staffed with highly qualified experts to assess the capacity and skills of the local suppliers, to offer supplier solutions to foreign investors and negotiate with the investors’ commitments for addressing the training and skill development needs of their local suppliers.90

In Wales in the United Kingdom, the efforts to attract foreign direct investment are complimented by the “Source Wales” program, which objective is to increase sourcing from local companies by foreign investors and improve the capacity of local suppliers to respond to the needs of large foreign firms. The Welsh Development Agency identifies potential local supply opportunities for foreign investors, provides capacity development services to potential suppliers, including a series of best practice, awareness raising and benchmarking programs designed to help suppliers become ‘world class’.91

A slightly different and highly successful approach to supplier development was implemented in Ireland. In just a decade (1985-1996) through supplier development programs, Ireland achieved major growth in: plastics, metalwork, tooling, pressed parts, plating, electronic sub

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89 For example, studies in the Czech Republic and later in Serbia showed clearly that companies did not see their own deficiencies in terms of suitability to become suppliers to multinationals (Knowledge Transfer Conference Istanbul 2005).

90 Such a model is implemented successfully in Costa Rica, where the investment promotion agency was very influential in the decision by Intel to locate in Costa Rica.

91 Over 20 supplier associations were created under the program, these are often headed up by major foreign investors, which tutor potential suppliers in world class production techniques. The Welsh Development Agency is an intermediary in the process, while foreign investors are closely involved in various sector-focused technology forums and collaborative training projects. For details see: Potter, J.: “Embedding Foreign Direct Investment” (OECD)
assembly, cabling, instrumentation, electronic testing and mechanical engineering services – all of these sectors were new to the Irish economy.

The Shannon Development agency have helped attract major foreign investors into the Shannon Free Zone and technological park and implements the Shannon Supply Network program focused on building and strengthening the linkages between the foreign investors and local companies. The Irish example has been followed by many Central and Eastern European countries.

Kazakhstan has also initiated a supplier development program, under which the KazContract Agency is charged specifically with supporting local suppliers in industrial infrastructure projects (especially industrial and export zones) and oil company investments.92

Macedonia is considering the introduction of a supplier development program, which will build upon the success of its Technological Industrial Development Zones (TIDZs), which have contributed to the emergence of a local automotive industry driven largely by foreign direct investment.93 The entry of large-scale multinational operations through the TIDZs has helped Macedonia build a more modern and globally integrated automotive components industry, but as domestic firms produce mainly after-market parts for the local market, there are limited opportunities for these firms to become suppliers to the Tier 1 foreign companies. For that reason the Macedonian Government plans to introduce a supplier development programs in the near future to support continued growth of the automotive industry.94

Under the approach taken in the Czech Republic (Figure below), to a large extent identical to the Irish model, multinationals, government authorities and local SMEs determine together which are the critical issues in order to increase the subcontracting of local suppliers, how to overcome shortfalls in the competencies, skills and technical capacities of local SMEs, and how to improve the business environment to ensure that the share of locally-supplied goods increases.

92 The Kazakh Content Increase Programme is a partnership between government sponsored vocational and enterprise support programs and a company sponsored competency development initiatives between the Kazakhstan government and Karachaganak Petroleum Operating B.V. (a consortium between the BG Group, Eni, Chevron and LUKOIL).

93 The American company Johnson Controls established a plant for electronic dashboard in TIDZ Skopje 1 in 2007 employing over 300 people; and expanded into a second plant for seat covers in TIDZ Stip in 2012 to employ over 1,000 people. British manufacturer of catalytic converters Johnson Matthey established two plants in TIDZ Skopje 1 employing over 400, followed by American producer of capacitors Kemet Electronics and Italian Tehnohose to produce high-pressure hydraulic fittings and armored rubber hoses for the automotive and construction industries; The Belgian bus manufacturer VanHool is investing 20 million EUR in a plant in TIDZ Skopje 2 to produce buses for the U.S. market and employ around 400 people. The German Dräxlmaier Group built a new plant in Kavadarci to supply premium automakers with wiring systems and the German Kroembert and Schubert invested in a new plant in Bitola to produce cables for global automakers.

94 Under a program implemented in partnership with the World Bank.
**Figure: Supplier development program in the Czech Republic**

Czech Invest, manages the National Supplier Development Program, which collects and distributes to foreign manufacturers information on the products and capabilities of potential Czech component suppliers, and is actively engaged in matchmaking between foreign investors and local companies. It organizes “Meet the Buyer” events, where the focus is on the type of components and services that foreign investors are considering to subcontract, as well as seminars and exhibitions on how to increase local sourcing.

The core element under the program, however, is the upgrading of selected Czech suppliers. These suppliers are selected according to predefined criteria from the high-technology industry sector or are engineering firms that are suppliers to a wide range of industries. The selected firms produce an upgrading plan, tailored to their individual capacities and requirements. The agency supports the upgrading process, which includes consultancy and training support in utilization of technology (technology extension), general management operations, quality control and organizational change. Then the agency makes proposals to foreign investors indicating concrete Czech suppliers.

The Serbian programme, also a variation upon the Irish model, follows closely the Czech model but is primarily designed to improve the export performance of local SMEs through engagement with foreign investors with the goal of reducing imports (import substitution). Both the Czech and Serbian approaches are considered very successful.

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95 For details see: Potter, J.: “Embedding Foreign Direct Investment” (OECD)
96 Within eighteen months of the completion of the Czech programme $46 million dollars’ worth of additional business attributable to Supplier Development was achieved. In Serbia $30 million of contract were awarded to companies participating in Supplier Development before the end of the pilot. Source: “International Experience in Supplier Development” The World Bank, Washington D.C. (April 2008).
10.2. Additionality

An important feature of the Czech approach is that it creates linkages for local suppliers to multinational companies (promoting technology extension\(^{97}\)), as well as to research institutions, promotes the transfer of technology to the SMEs, which in turn allows them to enter other product markets or to apply technologies gains in other sectors of the economy. Overall, supplier development helped Czech SMEs move up in the supply chain, followed by research-industry collaboration initiative that allowed these companies to generate products and services for the higher-value added market segments based on innovative technologies developed in collaboration with local scientists. Presently, supplier development is an integral part of the economic development policies in the Czech Republic, not only with respect to the attraction but also the retention of foreign investors.

10.3. Conclusion

There is evidence of the economic impact of supplier development programs from many countries and in many sectors.\(^ {98}\) In order to derive maximum benefit from these investments in the planned industrial parks, the Ukrainian Government may consider avenues to increase the share of local suppliers to the attracted foreign investors through a supplier development program. This will bring benefits in terms of increased income streams, job creation, technology transfer, raised levels of competence in Ukrainian firms and so forth.

Recent examples of this progression can be seen in economies as diverse as Ireland, Serbia and the Czech Republic. The development of a healthy and internationally competitive productive sector is essential to Ukraine’s future economic well-being and a complementing the FDI attraction with targeted supplier development program would help Ukraine achieve these longer term goals.

10.4. Recommendation

Ukraine may consider the Czech experience in implementing a supplier development program. Prior to the program the Czech automotive and electronics industries supplied only very low

\(^{97}\) In effect large foreign manufacturers provide technology extension services to their suppliers, not with the purpose of the developing new technology but rather to expand the diffusion and adoption of already existing technology, and in this manner to contribute to increasing the absorptive capacity of their suppliers. Technology extension services usually comprise an assessment of the state of the firm’s operation, followed by the proposal of an improvement plan and assistance in its implementation.

\(^{98}\) A good summary of the benefits derived from such interventions is provided in: Kuglera, M.: “Spillovers from Foreign Direct Investment: Within or between Industries?” School of Social Sciences, University of Southampton, Southampton, UK. (2005)
value items, small plastic parts, fastenings etc.\textsuperscript{99} Through the program domestic suppliers were brought to international standards of production and have managed to move to higher-value added segments of the supply chain.\textsuperscript{100}

Implementing a supplier development program could be a very significant step in attracting foreign investment in the planned industrial parks, as multinational companies would be more inclined to invest in areas where they could establish a sustainable presence through local suppliers. In this context, a successfully implemented program and the establishment of local SMEs as suppliers to large multinationals would also lead to retention of FDI and sustainable presence of the investment in the country.

If Ukraine chooses to follow the example set by the \textbf{Czech} supplier development experience, local suppliers should seek to enter global supply chains at a point somewhat below their capability. Once local companies are part of the supply chain they could focus on developing innovative products and processes resulting from research-industry collaboration and move up the value chain to the more lucrative market segments and eventually become not just suppliers but strategic partners of the multinational company.

\textsuperscript{99} An example of this is found in the Czech company Tanex Plasty. This firm supplied very low end products to the automotive industry, polymer extrusions for car boots and head restraints. The supplier development programme helped them to develop their processes to include the high value-added activities of creating a complete head restraint unit fusing polymer and metal parts. Business with their existing customers grew but they also became a major exporter to the German and French Automobile Industry. Source: \textit{“International Experience in Supplier Development”} The World Bank, Washington D.C. (April 2008)

\textsuperscript{100} As a result of the program, 17 of the 20 companies involved achieved sales directly attributable to participation of $46m. Source: \textit{“International Experience in Supplier Development”} The World Bank, Washington D.C. (April 2008)
11. Technology road mapping

Next to implementing a supplier development program, the establishment of the planned and future industrial parks would benefit from conducting a technology road mapping (TRM)\textsuperscript{101} exercise of the various sub-segments of the local and regional value chains. For example, a TRM would identify gaps in different areas needed for the development of local supply chains,\textsuperscript{102} as well as opportunities for these to become more differentiated and to move to a higher value-added market segment or meet the expectations of a targeted supplier development program to attract foreign manufacturers.

In essence, goal of technology road mapping is to foster competitiveness of a specific industry or subsectors by removing existing barriers and move the sector to a more sophisticated stage that creates higher value-added. Establishing industrial parks based on TRM could effectively reinforce the development of Ukraine’s existing clusters, as well as foster the development of new ones, leading to innovation and technology diffusion.

TRM is also a powerful tool in providing relevant information for addressing policy coordination failures, which in the case of the Ukraine’s diverse levels of economic development and industrial specialization is especially important.

**Table: Benefits of technology road mapping**

- Help identify gaps that prevent the development of a sector/cluster or sub sector in areas where coordination failures are common such as: technological infrastructure, generic and pre-competitive R&D, specialized human capital, regulations or deregulations, other critical common infrastructure.
- Help understand global technology trends and develop consensus at the industry level about a set of needs and respective activities/projects required to address needs at the industry and government level.
- Provide mechanisms to incorporate in a systematic way business intelligence instruments like market and technology foresight.

\textsuperscript{101}TRM provides relevant information for addressing policy coordination failures needed to foster the competitiveness on the regional level i.e., information needed to develop certain sectors based on present potential as well as to move a particular sub-sector to a higher value-added market segment. Targeted design of the business support infrastructure offered by the Park following a TRM, will reveal areas of intervention to achieve the much needed additionally in terms of developing clusters and spillover effect.

\textsuperscript{102}TRM would be also instrumental in identifying gaps preventing the growth of local clusters in the areas where coordination failures are most common, such as lacking technological infrastructure (including common infrastructure), but most importantly it would provide a clear picture of the available specialist knowledge and technically skilled workforce, and would define the needs for knowledge and technology extension programs that could be put in place to transfer the most modern production/processing technologies, methods and techniques in the specific areas of specialization of the industrial park and Ukraine as a whole.
✓ Prepare the country for future challenges and opportunities caused by disruptive innovation by building human capital and competence in emerging areas and for cushioning the impact on well-established sector.
✓ Serve as a stage in implementing a supplier development program


11.1. Additionality

The technology road mapping process would inevitably provide market intelligence and market foresight for the planned industrial parks. A TRM exercise linked to the implementation of a targeted supplier development program would provide also added benefits, for example by creating links with global technologies and knowledge that could result in additional opportunities emerging from connecting Ukraine’s industry to global value chains in various sector sub-segments.

TRM would identify the range of needed knowledge and technology extension programs\textsuperscript{103} to improve the productivity of Ukrainian firms. The measures could include advisory services to local entrepreneurs in assessing business problems, identifying opportunities to upgrade technologies and industrial practices, as well as assistance in the implementation of specific business projects. The extension programs do not need to be limited to advisory services related to technology and know-how adoption from global knowledge stock, but could encompass support in obtaining certifications, and adjustment of production practices to meet specific standards (especially important under a supplier development program) and in promoting the adoption of sector-specific know-how.\textsuperscript{104}

11.2. Conclusion

Technology road mapping is a first step to identify gaps in different areas that affect the ability of a sector to compete and become more differentiated with increased economic value-added. It is possible not only to leave room for a TRM of national clusters but to set in motion a process

\textsuperscript{103} Extension programs are not limited to advisory services related to technology and know-how adoption from global knowledge stock, but also obtaining certification, and meeting standards, thus promoting the adoption of know-how in the industry. Some extension programs also include training on modern management practices. The aim is through dissemination of technical information and know-how, and the subsequent adoption of ‘new to the firm’ or ‘new to the country’ technologies and techniques to increase the technology absorptive capacity of targeted firms and sectors.

\textsuperscript{104} For instance if a group of firms realize that they could benefit from adopting certain standards or obtaining certain certifications, then an extension program would analyse the costs and benefits of such measures, propose a strategy that helps these firms achieve their desired goals, and finally implement the program. Also improving the linkages among leading companies and their suppliers, adjusting supplier’s practices and quality to meet the demand of the leading company is considered an extension program.
where small groups of companies in a region could come together and undertake TRM (under the support of a program).

11.3. Recommendation

Using TRM in designing the industrial parks in Ukraine and the business support service they could offer would increase their impact on the growth of the local economy and the ability to attract domestic and foreign occupants within the parks. In many cases it would be critical to develop extension programs in order to align the quality of local suppliers to multinationals or to improve their technology through ‘catch-up’ technologies.

In this context TRM could be a stage in preparation for supplier development program. Coupling TRM with knowledge and technology extension would in turn reinforce both programs.

Also TRM results may offer insights for introducing changes in tertiary education (e.g. increasing the proportion of IT engineers), or developing specialized mechanism for transferring technology from universities through, for example, building proof of concept labs or prototyping labs, changes in IP regulation/execution, formation of innovation-based incubators etc. – all innovation infrastructure features that the Ukrainian Government may wish to insert within industrial parks.
12. Science and technology parks

There are distinct differences between industrial parks and technology parks (discussed above). To emphasize: science and technology parks promote R&D and innovation by facilitating the transfer of knowledge from the research community to industrial firms, so that scientific knowledge could be converted into marketable innovative products, services or production processes. Such parks are also geared towards micro and smaller firms. In essence, a technology park merges industrial and manufacturing infrastructure with research and innovation capacity, creating in a sense a symbiotic relationship between science and high-tech production.

Technology parks are centred on research commercialization, by which is meant the process of transforming cutting edge scientific concepts and research outputs into precise specification and marketing requirements for products (or services) that can be manufactured, replicated and sold by industrial enterprises. In this context, the success of a technology park depends on an environment that promotes research commercialization, which in turn is conditioned upon an interactive dialogue and mission-oriented collaboration between scientists and entrepreneurs.\(^{105}\)

<table>
<thead>
<tr>
<th>Table: Definition of Technology Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>A project with a physical space, with formal and operational dealings with universities, research centers and higher education institutions, which has been designed to encourage the creation or establishment of technology-based innovative industries, or service sector firms with a high value added. All this with a management system actively participating in the technology transfer and value-added growth processes of the firms using the park.</td>
</tr>
<tr>
<td>As defined by the International Association of Science Parks</td>
</tr>
</tbody>
</table>

The first science-technology park was established over half a century ago in the United States\(^ {106}\) and its example has been replicated around the world. Globally there are over 500 science and technology research parks\(^ {107}\) -- all of them have been established with the mandate to accelerate economic growth through the creation of dynamic clusters of knowledge-based companies that generate high-value added products and services.

\(^{105}\) Other crucial elements include implementing a model for the protection of intellectual property rights that that balances the rights of inventor-research teams, those of the scientific institution, and the rights of the commercial companies participating in collaborative research programs; and transparent and appropriate financial incentives for the commercialization of science and research outputs.


\(^{107}\) The term research park is more prevalent in the United States, the same initiative is referred in Europe as a science and technology park.
In essence, a science and technology park provides the necessary infrastructure to nurture the innovation ecosystem by encouraging active collaboration between universities, research laboratories and large and small companies. The core feature of such parks, however, is providing the means to help transfer new scientific concepts and research ideas into innovative technologies for the market.

Table: The goals that define a science-technology park

<table>
<thead>
<tr>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>To establish strong functional links between industrial firms, universities, research centers and, in general, higher education institutions.</td>
</tr>
<tr>
<td>To promote the growth and creation of knowledge-based industries, and also of specialized service firms capable of generating a high added value.</td>
</tr>
<tr>
<td>To encourage the transfer of technology to the firms leasing space in the park.</td>
</tr>
<tr>
<td>To strengthen the relationships between the key players in the science-technology-business system in a region, including: the public sector, universities, laboratories, technology research and technology transfer centers, industrial enterprises, financial institutions, real estate developers, and firms leasing facilities within the park.</td>
</tr>
</tbody>
</table>

12.1. Additionality: complementing industrial park programs

The global trend is to move away from the traditional approach to competitiveness -- as a phenomenon linked to the provision of services (comparative advantage) -- typically offered through commercial parks or export processing zones; and has been replaced with a focus on knowledge and innovation as a source of economic growth and international competitiveness (competitive advantage) through inserting science and technology parks within industrial zones.

This is because over the past 6 decades, science and technology parks have proven to be a very effective tool not only for creating successful science and technology start-ups, but also, and more importantly, these parks have been instrumental in making existing companies more successful and competitive through the use of R&D.

In order for a local company to move up in the supply chain to the more lucrative higher-value added market segments it needs to generate innovative products and services. A pathway to achieving this objective presents itself by inserting within the planned and future industrial

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108 “A study of the social and economic impact of Spanish science and technology parks”, APTE, Malaga, Spain (2007)
109 Science and technology research parks are expected to generate benefits that go beyond regional development and job creation. Indeed, to the extent that research parks are effective, they have the potential to shift the terms of global competition. For details see: “A study of the social and economic impact of Spanish science and technology parks”, APTE, Malaga, Spain (2007)
110 Innovative activities can result in new products, new technologies and new types of supply or organizational types. Innovation is the main vehicle for companies to maintain a competitive advantage: by offering new products and solutions to their customers; and to enter new markets through partnership in global value chains, or by creating new markets based on their own innovative products and services.
parks in Ukraine business support services for innovation, such as incubation and acceleration services, and innovation infrastructure such as fabrication and prototyping laboratories, experimental manufacturing facilities and laboratories -- essentially creating a combined industrial-technology park.

Such approach would on one hand expand the tenant base of the industrial parks, but most importantly it would spur innovation entrepreneurship, and would bring innovative start-ups closer to their market -- the multinational companies and their local suppliers.

### 12.2. Conclusion

Science and technology parks promote economic growth because they allow for active collaboration between the science and technology players and industry enterprises. In this context, the success of a science and technology park depend on its ability to generate efficient networks with industrial production agents and the local and regional productive sector. Inserting features of a science and technology park within an industrial park would effectively facilitate the creation of such networks and ultimately ease the process of transferring technology from the research world to the market through collaboration with park tenant companies (both multinationals and locals) that use innovation to be more competitive.

International experience indicates that a company’s innovative performance stems from its capabilities and is related to its own attributes, while knowledge and technology spillovers resulting from innovative activities depend on the regional environment. In this context, using the planned industrial parks in order to create and nurture regional innovation ecosystems, could enhance the capabilities of local companies located within the parks (through technology and knowledge extension, technology absorption, upgrading the skills of the workforce etc.) and promote the alignment of academic research with industry demand. Examples from China demonstrate that in addition the company’s own innovation capacity and existence of corporate R&D departments, fostering an atmosphere of innovation within industrial parks would affect the company’s innovation performance.\(^\text{111}\)

An industrial-technology park will focus on the various aspects of FDI attraction, knowledge and technology extension, upgrading the skills of the workforce, as well on technology generation and transfer aimed directly to support corporate production. The co-habitation of foreign multinationals and their local suppliers, science and technology start-ups and the availability of innovation infrastructure on site would create the environment that supports and logistically helps a fast and effective research commercialization.

\(^{111}\) See: Tai-Ming Ben: "Interaction Analysis among Industrial Parks, Innovation Input, and Urban Production Efficiency". Asian Social Science, Canadian Center of Science and Education (May 2011)
12.3. Recommendation

Worldwide, companies that very successful in the market place are also champions in integrating new technologies developed in collaboration with scientists. A combined industry-technology park that co-hosts large multinational companies, local companies part of global supply chains and scientists, knowledge-based enterprises, innovation start-ups, could direct Ukraine’s scientific and research capabilities to respond to industry demand, which will make companies within the park more competitive.
13. Research-industry collaboration platforms

Throughout history, scientific breakthroughs have served as the foundation for progress, wealth generation and economic growth. However, the achievements of science by themselves do not generate wealth or push economies forward; these are a consequence of the proliferation of products and services generated as a result of the application of scientific breakthroughs or technological inventions by industrial enterprises.

The dynamics of today’s markets require that companies constantly introduce innovative products and processes in order to be competitive. To this end, the most successful companies collaborate with scientists and transfer of technologies developed by research institutions in their production processes.

A common approach to promote research-industry collaboration is concentrating businesses in various types of “parks” for industrial, commercial manufacturing or processing use, and creating ties to scientific and research capacity that supports the industrial enterprises in their product development based on the commercialization of new technologies developed by the scientists. Such parks are referred to in different ways (e.g. industrial technology parks, innovation centers, technology incubators, university research parks etc.); however, the common feature is that they are large plots of land designated for industrial and warehouse use that are located in the outskirts of urban areas with premier research institutions.112

13.1. Conclusion

Science and technology parks are spaces that integrate the scientific, technical and social capabilities facilitating the creation, transfer, dissemination, measurement and management of knowledge, whereby their most important feature is the transfer of this knowledge into production activities. This is achieved typically by strengthen the connections between the knowledge-based firms and the firms that integrate the new technology in their production processes. This is how knowledge is put to productive use. This process could be accelerated when both type of firms are located with the same space.

Ukraine could follow the example of China, where industrial zones were purposely set up as incubators for national and regional industrial modernization. The Chinese zones (or parks), from the late 1980s took on a role analogous to that of university research parks in the United States and were instrumental in raising the level of technology-based products, research

112 For this reason technology parks emerge close to universities, as the university provides the land and buildings (typically to generate income from rent), while the industrial enterprises benefit from the possibility to collaborate with the university scientists and the access to highly qualified labor force - enrolled students and university graduates.
commercialization, and internationalization of products, re-developing traditional industries, and accelerating the growth of emerging industries.  

13.2. Recommendation

Co-hosting researchers and industry enterprises within the same space, as is the case of an industrial-technology park, is a step in promoting research-industry collaboration and the transfer of technologies developed by scientists to the production cycle of an industrial enterprise. There are no restrictions as to setting-up technology parks under the Ukrainian framework on industrial parks. Current legislation allows inserting technology and science park features within proposed industrial parks. Moreover, core feature of the model agreement (as defined under Ukrainian law) is that the park manager (after approval of the application for establishing an industrial park) defines the scientific and technology-related activities to be undertaken within the proposed park.

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114 See: Resolution of the Cabinet of Ministers of Ukraine No 216/16.01. 2013 “On approval of the procedure for decision making as to the entry of an industrial park into the register of industrial parks” amended by Resolution of the Cabinet of Ministers of Ukraine No. 430/ 26.06 2015
14. Technology transfer from research to industry

Commercialization of scientific solutions research driven by researchers (supply push, i.e., intellectual property licenses granted by researchers to industrial enterprises), is a model predominant countries with well-established ties and collaboration between the research and industry worlds. This approach alone would not yield the desired results in a country where research institutions do not benefit from close and interactive relations with industry enterprises.

Most post-communist transition countries, especially the former Soviet Union, applied a variation of this model very successful prior to 1990s, as scientific institutes were established to serve the local industry and their research outputs were dedicated to the needs of the industrial enterprises. The institutes were in very close collaboration with the industrial enterprises – some were even formally attached to the enterprises and were funded by them. With the elimination of this model of research-industry collaboration, the “supply push” approach for research commercialization seized to yield the expected results.

Inserting science, as well as the necessary innovation infrastructure within industrial parks in Ukraine would essentially emulate the previous model and could bring the desired results.

A further benefit of the mere co-habitation of researchers and multinational companies, their local suppliers and domestic entrepreneurs in the same space is that it would promote contract research driven by the industry. Under this approach industry enterprises approach scientists to solve a particular problem associated with production processes or product development dilemmas. In such pattern of collaboration, more or less a form of “industry-sponsored research”, scientists essentially engage in various stages of the product development process based on precisely defined industry request, and help the industrial enterprise develop solutions that makes it more competitive.

14.1. Recommendation

Establishing combined parks will deepen research-industry collaboration, which is essential to push Ukraine on the path of knowledge-based economic growth. The transition to a knowledge-based economy is essentially intertwined with the development of a research commercialization ecosystem based on the dialogue between researchers and enterprises working towards the transformation of research outputs into marketable products and services. Inserting the features of a science and technology parks and the corresponding innovation infrastructure within the planned industrial parks in Ukraine could create such an environment.

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115 Technology push innovation, however, is driven by R&D activities and from competitive advantages provided by new technologies. It generates more radical innovations and creates new market segments.

116 Demand pull innovation originates from the intention to satisfy the needs expressed by the market and for that reason it generates incremental innovation. Results usually fit into already existing markets.
15. Inserting innovation infrastructure within industrial parks

The common infrastructure and experimental facilities that are typically part of a science and technology park benefit both innovation start-ups and more mature local companies that intend to develop innovative products and processes in order to move up to the more higher value-added market segments. The availability of such infrastructure within the planned industrial parks in the Ukraine may also encourage multinational companies to locate a portion of their R&D activities within the parks.

15.1. Example of innovation infrastructure: Fab Lab

A fabrication laboratory (Fab Lab) is a special type of a Proof of Concept Lab that stimulates knowledge sharing, entrepreneurship, and applied research.\footnote{Different Fab Labs have different business models, some Fab Labs focus only on proof of concept stage, while others encompass several phases along the innovation value chain that include incubation and go-to-market services.} Fab Labs revolutionize not only the way products are prototyped, designed, manufactured, and shared, but also bring a wide spectrum of socio-economic benefits, such as open public access environment that includes industry-grade technology, facilities, educational workshops, mentorship for prototyping and digital fabrication of innovative ideas for products and processes.

Rapid advances in new disruptive technology like 3-D printing, advanced robotics, and others, have made it possible to create prototypes quickly and cheaply using digital designs. These capabilities are could be made available to companies and researchers within the planned industrial parks in Ukraine through creating Fab Labs, which would help all companies (multinationals, local suppliers, start-ups) located within the parks to cheaply create and distribute finished prototypes of products.

The primary focus of the Fab Labs would be allowing engineers to test a product through the entire innovation value chain – from defining idea, prototyping, early-stage technology and product development to production and marketing. The ability to develop prototypes of new products in the Fab Labs located within the planned industrial parks would help mitigate the risks associated with launching new products and ideas by tenant companies and would help them eliminate failures when products are launched in real life. Fab Labs could be an additional benefit for the companies to invest in the industrial parks and may encourage large multinational companies to locate product development units within the parks.

15.2. Example of innovation infrastructure: Innovation incubation services

Business incubation (sometimes interchangeably referred to as “acceleration”) is a comprehensive business support program designed to nurture business ideas and innovation-based start-up companies for certain time duration. Incubation provides emerging innovation-
based businesses with an environment that would support their establishment and increase their likelihood of success.\textsuperscript{118}

Traditional incubator services include facility space, flexible leases, shared use of common office equipment, direct business assistance and guidance, mentoring, networking access to capital, and other technical resources. Inserting innovation incubation services\textsuperscript{119} within the planned industrial parks will help start-ups and more mature local companies exploit close ties with the research community.

15.3. Recommendation

Making Fab Labs available in the planned industrial parks in Ukraine would support a range of individual and collaborative research. These could function as a springboard of support companies to move along the entire innovation value chain – from defining idea, prototyping, early-stage technology and product development to production and marketing.\textsuperscript{120} The Fab Labs could be also used by mature companies located within the industrial parks to develop new prototypes more efficiently. But most importantly, making Fab Labs available within the industrial parks will stimulate new expeditious ways for design and manufacturing: in the Ukraine, market failures and high costs prevent inventors, engineers and entrepreneurs from rapid experimentation and prototyping.

Providing innovation incubation services in the planned parks could help overcome systemic inefficiencies in Ukraine with respect to the provision of business support services to knowledge-based entrepreneurs and technology start-ups, as these would offer access to training, expertise and mentorship and in this manner will create an enabling environment for applied research and entrepreneurial ventures.

\textsuperscript{118} For detailed discussion see: Research report: “Feasibility study on Technology Incubators and New types of Business Incubators” Small Innovative Business Support Network / SIB net (EU 31398) Riga, Latvia (2011)

\textsuperscript{119} A strong benefit of innovation-based incubation, specifically in locations with underutilized entrepreneurial potential, is creating a supportive environment for business development experiments, focusing on educating, mentoring and networking to ensure that non-feasible business ideas fail early in the process, effectively reducing up-front entrepreneurial costs, and in the process refining good business concepts to increase their chances of succeeding in the marketplace.

\textsuperscript{120} Different Fab Labs have different business models, some Fab Labs focus only on proof of concept stage, while others encompass several phases along the innovation value chain that include incubation and go-to-market services.
16. Conclusion

The Ukrainian government recognizes the need to rapidly promote economic growth, has taken the necessary steps to define the corresponding policy objectives and has adopted new legislation and amended exiting normative acts in pursuit of this objective. A review of the legal framework governing industrial parks reveals the intentions of the lawmakers of the country to eliminate barriers to FDI attraction and investment; a very generous incentive package is defined by law, codified procedures follow international best practice and offer the necessary flexibility to ease the establishment and operation of the industrial parks.

The review of the legislation, however; also reveals that the adopted norms were not crafted to address the specific problems that prevent reaching the main policy objective, but merely mirror best practice legislation from other countries. In this context, despite the adoption of a tight and sophisticated framework, obtaining the desired outcomes would require significant effort. To put it bluntly: spurring investment and FDI attraction in the Ukraine would hinge on implementation.

Typically, legislation on industrial parks grows, in a sense organically, through collaborative efforts to further improve the investment climate of a country. The Ukrainian legislation on the other hand was adopted in an effort to ‘jump start’ an environment conductive to investment and FDI attraction. This is evident from the level of detail and prescriptiveness of the law; the intention is to reduce possibilities of misinterpretation and induce certain entrepreneurial behavior.

Consultations part of an impact assessment (prior to the adoption of the law) would have revealed the problematic issues preventing the realization of the policy objectives, the legal or administrative interventions needed to resolve them (including the format and depth of corresponding regulations), as well as the most appropriate and effective implementation mechanisms. It appears that this is not the case in Ukraine and special programs need to be designed within the current legal framework to address specific problems and promote the occupancy of the parks. Examples include initiatives such as implementing supplier development programs to enable local companies to become part of global supply chains, incentivizing the location of R&D departments within the parks to spur the generation of higher value-added products and services, inserting innovation infrastructure within the parks to promote the growth of local knowledge-based companies and the evolution of competitive industries.

Adopting legislation aligned with best practice approaches, places Ukraine on par with other countries competing for FDI to promote the growth of export oriented, globally competitive industries. However, the ‘borrowed’ legal solutions would not address concerns associated with the country’s fragmented decision-making process, nor the repeated incidents of horizontal
coordination failures, \(^\text{121}\) nor the concerns associated with the capacity of municipalities and regional government to conceptualize and initiate industrial parks. \(^\text{122}\)

The review puts forward a strong recommendation for a heightened focus on implementation of the legislation. This focus could be reflected in tailoring successful instruments to the specific situation in the Ukraine through interactive consultations with interested parties, investors, representatives of the innovation ecosystem, etc.

A related comment is that the approach taken by the Ukrainian Government may be too aggressive. It would not come as a surprise if Ukraine is hard pressed to develop 10 pilot industrial parks simultaneously. This does not mean that the Government should abandon the idea of developing multiple parks. The comment merely suggests a heightened focus on developing a flagship industrial park, where different models and programs are tried and tested. Then extending the successful solutions to other planned parks under a ‘hub and spoke’ model, where the flagship industrial park serves not only as a model but also as a resource to other parks.

\(^{121}\) Inefficiency of the public service, corruption, captivity to oligarchic pressure, restrained market competition, unpredictable policy making, sluggish implementation of laws etc. See: “Investment Climate Statement 2015”, U.S. Department of State (May 2015)

\(^{122}\) Despite that by law municipalities could take the lead in establishing industrial and technology parks, some observers voice concerns as to their authority to initiate such complex initiatives, as well as their financing capacity to engage in such projects
17. Annex 1: Some characteristics of successful supplier development programs

- Financial products - variety of loans, leasing, venture capital, credit guarantee funds, micro loans, export credit insurance etc.,
- Joint venture support
- Management – guidance on business and financial planning, tendering advice, regulatory navigation advice, marketing
- Technical support particularly on quality standards, lean manufacturing, etc.
- Improved human capital through human resources department
- Matching and merging business to business networks.
- Meet the buyer events
- Sourcing database to match local suppliers with investors\textsuperscript{123}
- Introductions of participant companies for joint tendering and possible cluster initiation
- Development of national quality standards

\textsuperscript{123} Czech Invest has a field in their database which identifies companies looking for joint venture partners.
# 18. Annex 2: R&D tax credit schemes: international best practices

<table>
<thead>
<tr>
<th>Country</th>
<th>Description of R&amp;D Tax Credit Scheme</th>
<th>Qualifying Expenses</th>
</tr>
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<tbody>
<tr>
<td>Chile</td>
<td>In Chile the R&amp;D tax credit is available for in-house R&amp;D, as well as a broader range of costs, including costs related to movable property, real estate and intellectual property protection. The tax credit is also available for half of the expenses for conduction R&amp;D activities abroad. Chile also offers a number of different governmental grant programs to encourage investment in R&amp;D.</td>
<td>Full deduction of all costs claimed under the R&amp;D tax credit in the current year, plus a 35% tax credit (carry forward) on qualifying R&amp;D costs, to a maximum annual credit of USD1.2 million. Full tax credit on expenses incurred for in-house R&amp;D projects and R&amp;D contracts with third-party researchers. (contract and collaborative research)</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>In the United States the R&amp;D tax credit can be applied to all activities undertaken to develop new, improved and more reliable products, processes and formulas. Examples include: • Developing or testing new products or materials, tools, new or enhanced formulations • Testing new concepts through trial and error experimentation • Design and analysis of prototypes or models or improving existing products</td>
<td>All wages subject to income tax withholding that are paid to the employees performing the qualified activities. 65% of amounts paid to non-employees to perform qualified activities (contract research) Supplies (non-depreciable property)</td>
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124 While the R&D tax credit is a federal tax incentive, many states have instituted matching tax incentive regimes, some of the offering a more generous tax incentives. Business can take advantage of both the federal and the state credit for the qualifying expenses. Originally the R&D credit was applicable only to companies generating new technical knowledge, basically limiting the incentive scheme to sectors like high-technology, biotechnology and pharmaceuticals. But as it has proven to be an effective tool for promoting new technological development the expenses eligible for the credit, i.e. the qualifying activities, was broadened to include the use of technological principles to develop new or improved products, processes, software, etc.
- Developing or improving production or manufacturing processes
- Developing, implementing or upgrading systems/software
- Paying outside consultants to perform any of these activities (contract research)

To qualify, these activities must be technological in nature, make use of scientific knowledge and principles and involve iterative testing. The key qualifier in this respect is that there must be uncertainty at the onset of the activity as to whether the new product, process or software would actually work and this uncertainty is eliminated by way of conducting tests and modifying the original hypothesis by trial and error.

In the U.S., in addition to the R&D credit, businesses could also apply for grants to develop proof of concepts and prototypes of new products and processes.

<table>
<thead>
<tr>
<th>France</th>
<th>From all EU countries France offers the most favorable R&amp;D tax incentives: basically all industrial, commercial or agricultural businesses, as well as associations, are eligible for the R&amp;D tax credit. The credit is either deducted from annual corporate tax or reimbursed after a period of three years. Certain innovative SMEs can receive R&amp;D credit in cash at the end of their first year of business. Also, a short advance approval period allows companies to obtain confirmation of their R&amp;D eligibility from the Ministry of Research and Advanced Education before the launch of a research project. The ministry has 90 days to respond, after which time eligibility is assumed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All wages and all costs of equipment dedicated to in-house R&amp;D activities Subcontracted research activities (contract and collaborative research) Technological surveillance Costs for patent filing and protection.</td>
</tr>
</tbody>
</table>
19. Annex 3: Differences between an “industrial park” and an “industrial zone”

The term “Industrial park” means conceptually developed area situated in legally settled and adjusted land with high concentration of infrastructure and containing among industrial buildings also green zones, commercial and administrative buildings or storage facilities. Usually, there is concentrated mostly "lightweight" industry and companies providing main producers with some services. In the highly developed countries, they put accents on an integration of industrial parks with other parts of cities, with housing areas, commercial centers, schools, universities or leisure-time zones. Another important feature is high dynamism of development – entrepreneur continuously move in and out. Usually there is one managing institution, either public or private, which provides producers with some services (accounting, marketing, advising, etc.), and offer land parcels for rent or sale.

The industrial park is usually not specialized only in attraction of big companies, but there is set apart some piece of land for small and medium enterprises. By this strategy the management tries to reduce a risk of economic problems connected with a leaving of some big company. Sometimes the managing company also provides support of sharing innovations, promotes applied research or assists in increasing of an export. With regard to a structure of industrial enterprises, there can be also sectorial industrial parks, which are specialized in a certain type of industry (e.g. automobile), but also there may be industrial parks, which try to reduce excessive dependence on one sector of economy by diversification of their portfolio by enterprises conducting business in different types of industry.

On the other hand, the term “Industrial zone” is usually defined as a huge area, with some level of infrastructure (usually lower than in industrial parks), on which is situated mostly heavier and space-demanding enterprises. Usually, it is not such integrated like industrial park and also it can be located much further from urban areas. The most important requirements for location are good access to highways, railways or airports, i.e. to the traffic infrastructure.

The abovementioned definitions are only theoretical attempt to describe some basic features and set distinction criteria. However, there are almost never present pure applications of those notions in practice. Also legislators and state authorities are not consistent in using these terms (usually they prefer “industrial parks”).

There are many classifications with regards to size and location of the industrial parks and zones.

Local industrial park or zone is mostly orientated on small and medium enterprises, which employ mostly local people. It is built on a small territory, which usually does not exceed 10 ha. As benefits of such areas we consider a better regional diffuseness, a smaller necessary investment for its creation and a cultivation of regional comparative advantages.

Regional industrial park or zone is mostly located nearby municipality with at least 40 thousands inhabitants. It includes developed infrastructure with good access to quality roads (optimally a highway) or a railway. On the area of 30 ha there should be situated among small
and medium enterprises also some administrative or commercial buildings. There is need to have own advertisement materials. The own management team is advantage.

Industrial park or zone of national (international) importance – strategic park is specially prepared for biggest, mostly foreign, investors. It covers area approximately 100 ha and more. A very high level of infrastructure is absolutely necessary. It should be located in area, where lives at least 180 thousand people. This type of zone definitely has to have own management and a proper marketing.
Annex 4: The evolution of industrial parks.

The first generation of industrial parks was established in the early 1970s. These parks were driven by public sector development and operated with government subsidies for services and facilities. They were basic compared to modern standards, with simplistic architecture offering halls and space for storage. Over the decades the scope of services provided by industrial parks has become more sophisticated and holistic. In the late 1970s and 1980s, the new generation of industrial parks was built with greater attention given to the requirements of science, technology and business. During the 1990s, industrial parks emerged with greater flexibility in the use of buildings and space, and a wider range of support services supplied to firms. There was a gradual shift from ad-hoc private sector licensing to plan and coordinated public private partnerships. Private sector involvement led to improved services, greater product differentiation and non-price competition. The most recent wave of industrial parks constructed since the late 1990s are designed to promote new innovative industries and technologies, as well as to create attractive environments for employees with facilities such as housing, medical services, shopping and educational establishments. The private sector develops, owns and operates the park on a cost-recovery basis. The authority only regulates activities within the confines of the park and outsources core functions to the private sector. The types of facilities, services and amenities that a park provides depend on the industries and sectors it is targeting, and the obstacles the park is intended to overcome. Science and technology parks are aimed at technologically-advanced industries and emphasize high-level support services, such as marketing, technical consultancy through networking with local R&D institutions, advisory services on finance and venture capital and joint venture partners. Along similar lines to industrial parks, Export Processing Zones (EPZs) are useful for countries working to establish export-oriented manufacturing sectors while lacking the technical or administrative capacity to develop a countrywide system to allow exporters duty-free access to imported equipment and materials. In some countries, EPZs preceded the establishment of industrial parks. Taiwan Province of China established its first EPZ in the southern port city of Kaohsiung in 1965 as part of an export-oriented industrialization strategy. It provided basic infrastructure and freedom from red tape. Two other zones were established in 1969 when applications for Kaohsiung EPZ exceeded the space available. A combination of the advantages of a free trade zone, an industrial estate, and all the relevant administrative offices of the government were credited with helping to raise levels of FDI and exports, and led to reform of regulatory procedures. When successfully managed, industrial parks can provide an environment for enterprises and innovation to flourish. Unfortunately, they can also be dreary, unfriendly places that suffer from problems such as poor environmental management, traffic congestion and pollution. Rather than enhancing quality of life, many of Europe’s industrial parks are growing and operating in an unsustainable fashion. They are often run down spaces, marked by social and environmental problems caused by poor planning. These issues have a negative effect on people who work in industrial parks and live nearby. Sustainable industrial parks reflect a desire to address these challenges.
21. Annex 5: Innovation incubation services

The provision of innovation incubation services specialized by sector, within each of the planned industrial parks would effectively specialize these by sector, which in turn would require a different set of business support services. For example incubation and acceleration programs would be the appropriate instruments to promote the growth in the information communications and technology, as well as possibly the proliferation of pharmaceutical start-ups focusing on biotech and life sciences. However, the machine building, electronics, food processing or extractive industries sectors would require a combination of innovation instruments that go beyond business incubation i.e., technology extension services, Fab Labs and prototyping facilities, certification laboratories, experimental production facilities etc.

To gain better understanding of the demand for specific business services that the incubator within each park should offer, it is advisable to conduct a market survey. This would help assess what percentage of existing companies, research institutes/universities and would-be entrepreneurs are interested in the business incubator and would form its likely entrepreneurial pool. Typically, such undertaking requires a needs analysis, or demand survey, which attempts to quantify the size of the potential market, its characteristics and needs, now and in the future. This includes defining the survey pool, data collection methods and the development of the survey instrument and analysis framework.

In addition to the survey, a key determinant for success are repeated consultations with stakeholders from the innovation ecosystem, business leaders, organizations providing support to businesses and other intermediary organizations that gather qualitative and quantitative data on the market.

Such analysis is very important as the survey alone would be unlikely capture fully reliable market information. Generally, the survey pool is composed of ‘would-be’ entrepreneurs i.e., people who wish to establish a business, and thus, define the future market for incubation services; and people who already have started a business – i.e., people that define the current business incubation market. The first category of respondents is often composed of people that are unaware of the knowledge and skills they lack at the moment, have very unrealistic expectations and few of them would actually embark on a business venture; and the second group of respondents would likely not need incubation support by the time the incubator is established, as they would have either managed to achieve growth on their own, or may not need business incubation services due to a change in future market conditions.
Annex 6: International best-practice: Israel’s technology incubator program

Under the Israeli Technology Incubator Program (TIP), 28 incubators were established in the period 1990-1992 in cooperation with universities, local authorities, and large firms. Each incubator was a not-for-profit entity providing financial support, consulting, and office and lab space to approximately 8 incubator companies each year and in this period about 200 projects in various stages of R&D were carried out. In 2002 the office of the Chief Scientist (OCS) started privatizing the incubators and by the end of 2006 out of the existing 24 incubators, 17 had been privatized and 1 new private Bio-Tech incubator was established. The lessons learned from the TIP are:

**Strong public support for seed finance is vital.** Only 2.4 percent of the incubator projects received funding from venture capitalists (VC) while still in incubation, a very low proportion considering that Israel’s high-tech industry relies heavily on VC funding—52 percent of firms are funded by VCs.

**Strong initial public support can decrease as projects mature.** Private funding to the incubator management team increased over time, and over the years most of the incubators were privatized. Today 17 of the 24 are privately managed (though government money is still invested in all the incubators). Strong public support may be needed at the beginning but can be reduced as the program matures and shows success.

**Expert networks should perform evaluations.** The TIP succeeded in establishing a network of experts who assist the program in their selection process, which is vital given that projects submitted are from varied fields and reflect very specific expertise.

**The entrepreneur’s share plays a big role.** The TIP stipulates that at least 30% of the shares of the company (after the first round of funding) remain the property of the entrepreneur. This keeps the entrepreneur motivated and strongly involved in the company the entrepreneur has the most technological know-how needed for developing the company.

**Great care should go into choosing a manager.** The motivation and capability needed to assist the growing enterprises are just as important as those needed to run an existing enterprise. Thus, strong attention should be given to choosing the incubators’ leading personnel. The privatization process dramatically contributed to raising the competence of the incubators’ management.

**Incubators need to be close to universities.** Shefer and Frenkel (2002) have shown that the proximity of an incubator to a university research center is of great importance especially in the life science fields.