



## PROMOTING GREEN FDI: Practices and Lessons from the Field

### HIGHLIGHTS

- **Government policies and initiatives matter for green sectors.**
- **Investment promotion agencies (IPAs) should ‘think outside the box’ to identify opportunities and ways to use foreign direct investment (FDI) to green their economies.**
- **IPAs can improve visibility of green investment opportunities through successful pilot projects and the preparation of pipelines of bankable projects.**
- **Promoting green FDI requires sector knowledge and a focused strategy.**
- **Partnerships and networks can play a key role in developing investment opportunities in the green economy.**

The United Nations Sustainable Development Goals (SDGs) have set a new global agenda through 2030 with a strong green dimension cutting across many goals and targets. Subsequently at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in Paris, 195 member States agreed on further measures to reduce green-house gas (GHG) emissions with the aim of keeping the rise in global temperature for this century well below two degrees Celsius (°C) above pre-industrial levels. These ambitious action plans call for profound transformations of energy, transportation, and dozens of other industries, demanding investment in the order of trillions of U.S. dollars.<sup>1</sup> This will translate into more public institutions, including investment promotion

agencies (IPAs), being asked by their governments to actively look for ways to contribute to national climate goals. It is, therefore, incumbent upon all IPAs to integrate climate goals and green investment promotion in their strategic considerations.

Meanwhile, green technologies are becoming increasingly viable in commercial terms, making them bigger and better targets for investment promotion. For example, in some places the costs of wind and solar energy generation have become competitive with traditional fossil fuel energy sources.<sup>2</sup>

As described by UNCTAD,<sup>3</sup> low-carbon investment, which we will name green investment in this study, can comprise of: investment in production processes with a

*The IPA Observer series is prepared by the Investment Promotion Section of UNCTAD's Division on Investment and Enterprise (DIAE). Its objective is to show examples of strategic and operational best practice in investment promotion from agencies worldwide to practitioners and governments in developing countries, with a view to share lessons that are practical and replicable for their investment promotion agencies (IPAs).*

<sup>1</sup> By 2030, an estimate of up to US\$1.2 trillion per year will be required to limit GHG emissions to the level needed for a 2 °C target to be met. Page xxvii, *World Investment Report 2010*, UNCTAD.

<sup>2</sup> The Economist, August 2015, *Renewable Energy: Puffs of Hope*.

<sup>3</sup> UNCTAD, 2013, *Promoting Low-Carbon Investment*.



reduced GHG impact; investment in clean energy generation; and investment in research and production facilities to manufacture GHG reducing products and provide related services. These are technology-intensive and often capital-intensive industries with technologies that are quickly evolving. In those developing countries, where green industries and practices are still nascent or non-existent, foreign companies are vital to jump-starting the low-carbon economy and should be more aggressively pursued.

This note uses three case studies to extract lessons on how this can be done. It examines IPAs, including investment promotion and business development agencies from developed and emerging economies, in diverse locations and circumstances. The very different approaches taken by the three IPAs to green their economies show that there is no one-size-fits-all solution and that a going-green strategy must be tailored to local circumstances. In many cases, an IPA needs to 'think outside the box' to seek niches and possibilities for green investment, consider what can be done given each agency's limited resources and look for partners to pursue the strategy, programme or project. Practices and lessons highlighted in this note are therefore relevant to a range of IPAs and business development agencies, including those from low-income countries.

The first agency featured in this note is Investment South Africa (InvestSA), the national IPA of South Africa that has facilitated the country's first foreign direct investment (FDI) projects in renewable energy generation and equipment manufacturing. The second is the Portland Development Commission (PDC) in Oregon, United States of America, a subnational IPA that has proactively attracted foreign venture capital for the expansion of local cleantech clusters. The third is the Ulsan Eco-Industrial Park (EIP) Center of the Republic of Korea, which has coordinated the creation of a symbiotic network of companies in the Ulsan EIP that give rise to opportunities to reduce waste and environmental impact while cutting costs.

<sup>4</sup> In April 2015, the decision was made to separate the trade and investment functions of Trade and Investment South Africa. As of this note's publication, the new structures have yet to be settled.

<sup>5</sup> Economic Development Department of the Republic of South Africa, 2011, *Green Economy Accord*.

## INVESTMENT SOUTH AFRICA USING FDI TO JUMP START RENEWABLE INDUSTRIES

In South Africa, InvestSA,<sup>4</sup> the national IPA which is embedded in the Department of Trade and Industry (DTI), leveraged FDI in renewable power generation and turned this investment into a catalyst for domestic manufacturing of renewable energy equipment. InvestSA did this with strategically commissioned studies, a practical approach to local linkages and good stakeholder networks including agencies such as the South African Independent Power Producers (IPP) Office and the National Department of Energy.

### **Policy background**

South Africa is heavily dependent on fossil fuels, which represent 87 per cent of the national energy supply. The country has large coal reserves, making that energy source easy and cheap, yet a green economy features prominently in national development plans. In 2011, the South African government, business community, organized labour, and civil society signed a Green Economy Accord. The Accord is one of several development plans that need to be reflected in DTI's Industrial Policy Action Plan. The Action Plan, in turn, provides strategic direction to InvestSA, which is expected to identify areas to which it can contribute by generating investment and jobs.

The Green Economy Accord makes 12 commitments to the advancement of a green economy, including the roll-out of renewable energy, the reduction of industrial waste through reuse and recycling, and industrial retrofitting. The roll-out of renewable energy includes a government commitment to purchase four gigawatts of electricity by 2016 from new, renewable, and domestically generated capacity.<sup>5</sup> By guaranteeing a market in this way and awarding contracts through public bidding, the government has stimulated major interest from foreign investors, which InvestSA is responsible for managing.

Another government measure in support of renewable energy is a cash grant of up to US\$3 million to cover 30 per cent of the costs

incurred by a company retrofitting existing industrial facilities to use renewable energy, such as through the purchase and installation of rooftop solar panels.

### ***How InvestSA promotes green investment***

InvestSA targets three types of green investments: renewable energy (generation and equipment manufacturing), waste management (reduction, treatment, conversion to energy), and energy efficiency (biofuels and greening of traditional industries).

This note looks into the agency's experience in promoting FDI in renewable energy generation. While the IPP Office, together with the South African Department of Energy, administers the bidding process for would-be energy providers, InvestSA provides foreign investors with information and assistance before and during the bidding process, coordinates procedures for startups with provincial and local governments, and helps bid winners tap into other sources of support for green projects. Bids are scored on the dual basis of electricity price (70 per cent) and economic development impact (30 per cent), which includes linkages that investors can create with local suppliers and the use of locally sourced equipment and services.

About 60 per cent of InvestSA's work is spent proactively marketing opportunities to targeted investors, and promoting the cash grant to green traditional industries (including encouraging existing companies to use renewable energy in their operations). The other 40 per cent of InvestSA's work is devoted to supporting firms that are attracted to South Africa, due to the country's strategic location and its government's procurement commitments.

### ***Challenges and lessons learned***

The country strategy for the promotion of green FDI was well defined by the national government, and it provided a framework for the work of the agency in the area. However, InvestSA's green economy department was created only after the signing of the Green Economy Accord, and initially the staff assigned to the department had little knowledge of the diverse range of highly technical fields under that label.

The first challenge faced by the agency was how to fill this knowledge gap as rapidly as possible through learning-by-doing. The renewable industry is relatively new, and the country itself had no experience in the sector setting. The localization potential for photovoltaics and wind equipment manufacturing, which InvestSA should promote, was unclear for the agency itself as well as for other partner government agencies. To meet this challenge, DTI's Industrial Development Division (IDD) commissioned two studies on the localization potential for photovoltaics and for wind equipment. The two studies gave InvestSA the understanding of domestic production capacity and competitiveness to make the business case to potential investors.

Recognizing the need for energy suppliers to buy into the technical feasibility of local content and linkages, IDD took a flexible position on requirement levels in its first negotiations, which were with the Spanish wind giant Gestamp Renewable Industries (GRI). InvestSA was involved in the negotiations from the very beginning and the overall government objective was to ensure that an appropriate and feasible level of local linkages was achieved. Effective consultations among relevant government agencies, such as InvestSA, IDD and the Department of Energy, were extremely helpful to develop a good understanding of the potential for localization, and finally helped bring GRI on board. In the end, GRI invested US\$210 million in a wind farm,<sup>6</sup> stimulating substantial local production of wind towers. The following year, GRI announced a US\$29 million investment expected to create more than 200 jobs in the manufacturing of 150 towers per year for the South African market. The success of the first projects not only generated much needed buzz for renewable projects in the investment community, but also revealed the potential for localization in the industry.

InvestSA's support for local suppliers to increase their absorption capacity also proved crucial. With collaboration and support from the agency, DCD Wind Towers, a South African company, became the first African company to manufacture wind towers. The support appears to be essential to the development of domestic suppliers, as it has proven difficult for domestic manufacturers to

<sup>6</sup> Website of GRI (<http://www.gri.com.es/en/gestamp-to-build-wind-tower-manufacturing-facility-in-south-africa/>).

obtain finance, even with the growing demand of energy suppliers. Another six companies supported by InvestSA are now assembling or manufacturing renewable energy equipment, including four making solar panels and two making inverters.

## PORTLAND DEVELOPMENT COMMISSION (OREGON, UNITED STATES OF AMERICA) PROMOTING INDIGENOUS CLEANTECH IN GLOBAL MARKETS

Portland's public policies and popular culture have earned it a strong reputation as a green city. Over the last several years, it has been repeatedly ranked as the greenest city in the United States, the number one forward-thinker in environmental awareness and resource conservation, first in LEED-certified buildings per capita, third best city to live in, and the fourth hottest spot for knowledge workers.<sup>7</sup> The Portland region has a large pool of cleantech and green building startups. However, none of the startups have yet grown to be large companies, and Portland has not yet fully tapped into its potential as a green FDI location. Portland is therefore supporting local green businesses in exporting green products and services and in attracting capital and investment, including FDI.

### **How the PDC promotes green investment**

This confluence of factors is aptly reflected in the investment promotion strategy of the PDC, known as the Greater Portland Global Trade and Investment Plan. Developed in collaboration with the Brookings Institution, the PDC's strategy prioritizes cleantech as an emerging sector to be nurtured and more firmly established.

The PDC has found a niche as a matchmaker and facilitator among companies looking for partners and as an aftercare provider to domestic and foreign firms, helping them grow through access to new markets. With the governments of Portland and the state

of Oregon having earned strong, increasingly global reputations for their leadership in environmental policy, the PDC has found that it enjoys a level of clout when bringing parties together and helping them seal deals with the glue of government support.

The most public manifestation of the PDC's ability to bring cleantech companies together in productive collaboration is an annual investor match-making event at Oregon BEST FEST,<sup>8</sup> a cleantech innovation conference opened by the governor of Oregon and featuring a cleantech competition, a speed networking event, company exhibits, and speakers from industry financiers, potential technology partners, and entrepreneurs.

It is through this event that the PDC introduced Portland-based Energy Storage Systems (ESS) to Pangaea Ventures, the Canadian venture capitalist that would eventually lead a US\$3.2 million in venture capital funding in 2015.<sup>9</sup> ESS is a maker of innovative, all-iron flow batteries, which are used in the storage and off-peak discharge of renewable energy, which was accorded the *Portland Business Journal's* award for Sustainable Product Innovation in 2015.<sup>10</sup> This company of 17 people will use the funding to ramp up production and commercialize its product. Targeting solar photovoltaic producers close to grid parity, ESS seeks to provide a low-cost storage option that will support the spread of profitable solar energy production.

Of equal importance to the PDC's matchmaking is its innovative aftercare service tailored to cleantech startups. Considering the large number of cleantech startups in the Portland region and the high rate of startup failure, the PDC's assistance in accessing new markets can be significant to company survival. Lucid Energy, a company with patented technology to generate electricity from the flow of water through gravity-fed pipes, had installed capacity at only one public utility, with one more under development, when it asked for the PDC's

<sup>7</sup> Portland Development Commission, 2010, *Economic Development Strategy: A Five-Year Plan for Promoting Job Creation and Economic Growth*.

<sup>8</sup> <http://oregonbest.org/news-events/opportunities/oregon-best-fest/>

<sup>9</sup> "Energy Storage Systems secures \$3.2 million flow battery VC funding," 8 October 2015. PV Magazine ([http://www.pv-magazine.com/news/details/beitrag/energy-storage-systems-secures-32-million-flow-battery-vc-funding\\_100021458/#ixzz3o0H62Jaj](http://www.pv-magazine.com/news/details/beitrag/energy-storage-systems-secures-32-million-flow-battery-vc-funding_100021458/#ixzz3o0H62Jaj))

<sup>10</sup> "Meet Oregon's Top 3 Sustainable Manufacturers of the Year for 2015," 29 October 2015. Portland Business Journal ([http://www.bizjournals.com/portland/blog/sbo/2015/10/meet-oregons-3-sustainable-manufacturers-of-the.html?ana=e\\_du\\_pub&s=article\\_du&ed=2015-10-29&u=kQWEms%2FdGNCV4AwEKpZG7a1n0v&t=1446158429](http://www.bizjournals.com/portland/blog/sbo/2015/10/meet-oregons-3-sustainable-manufacturers-of-the.html?ana=e_du_pub&s=article_du&ed=2015-10-29&u=kQWEms%2FdGNCV4AwEKpZG7a1n0v&t=1446158429))

help in introducing the technology to the city government of Johannesburg, South Africa. Lucid Energy knew that Johannesburg was looking at low-carbon options for mitigating power shortages, and the PDC was able to quickly obtain a letter from the mayor of Portland introducing the company to his counterpart in Johannesburg. Portland received a response within a week, and within three weeks, the mayor of Johannesburg came to Portland with a team, on an agenda organized by the PDC. Meeting with Lucid Energy, Portland's mayor and a roundtable of city bureaus, the Johannesburg delegation learned how the turbines were integrated into the municipal water lines and saw an effective demonstration of Lucid Energy. In May 2015, the mayor of Johannesburg announced plans to implement the same technology.<sup>11</sup>

### **Challenges and lessons learned**

In doing company matchmaking, the PDC's effectiveness depends greatly on the two mutually reinforcing factors of strong sector knowledge and relationships with a wide range of sector players. The PDC has only two full-time staff working on the green economy, neither of whom started their roles with experience in the field. Like InvestSA, the PDC has built knowledge and relationships through extensive desk research and strong customer service. This level of attention to clients keeps the PDC in close contact with companies throughout their projects and gives it privileged insights into the workings of each company and the sector. Knowledge of the industry's players, trends, and quickly changing technologies enables the PDC to design and promote BEST FEST as a high-value, well-attended event and to create a roster of priority companies for targeted aftercare.

The PDC maintains a roster of more than 60 priority companies, together with information on their technologies, markets, levels of development, international footprint and financial needs. This gives the PDC a bird's eye view of subsectoral strengths and gaps, which informs not only company-specific objectives but also investor-targeting efforts and policy advocacy.

## **ULSAN ECO-INDUSTRIAL PARK CENTER (CITY OF ULSAN, REPUBLIC OF KOREA) LEADING EXISTING INVESTORS TO A BUSINESS MODEL FOR GOING GREEN**

The region around the city of Ulsan is known as the Ulsan Industrial District. It is the Republic of Korea's largest industrial center and a global industrial leader in many respects. On just over 1,000 square kilometers of land, the Ulsan region hosts 15 industrial parks. For a sense of scale, just two of these parks, Ulsan Mipo and Onsan, include about 1,200 companies and more than 120,000 employees. Among them are more than 130 foreign companies from Japan, Germany, the Netherlands and the United States, such as BASF, Du Pont, Dow Chemical and the Solvay Group.<sup>12</sup> However, few of the companies operating in Ulsan are engaged in green industries as their primary business lines.

With this level of economic activity in such a concentrated area, the environmental impact must be carefully planned and monitored to manage waste and limit pollution. So in 2005 the Ministry of Trade, Industry and Energy introduced the EIP initiative for the transition of industrial complexes into eco-industrial parks. As part of this initiative the Korea Industrial Complex Corporation and the Ulsan Metropolitan Authority established the Ulsan EIP Center, which acts as a business development agency to identify and make the case for investment in green production processes with a reduced GHG impact. Going beyond waste disposal and pollution mitigation, the agency tries to reuse and recycle waste, cascading the use of energy and water in a way that optimizes efficiency and creates new value through industrial symbiosis.

### **How the Ulsan EIP Center promotes green investment**

The Ulsan EIP Center, established for implementing the Ulsan EIP project, explored symbiotic relationships and shared facilities among individual companies that would contribute to clusters achieving collective

<sup>11</sup> "How Joburg's energy-from-water-pipes will work," 7 May 2015. Mybroadband News (<http://mybroadband.co.za/news/energy/125756-how-joburgs-energy-from-water-pipes-will-work.html>)

<sup>12</sup> [http://www.investkorea.org/ulsan\\_en/invest/invest02.do](http://www.investkorea.org/ulsan_en/invest/invest02.do)

efficiencies that cut costs and increase eco-friendliness. The EIP committee included representatives of the national agency in charge of industrial park management, private companies, non-governmental organizations, and an R&D center of the University of Ulsan.

Potential project identification started with mapping the companies in a park, their inputs and their waste products. The Center then identified a series of potential projects for steam recycling. Potential projects were shared with stakeholders and the R&D center, which together investigated project feasibility and produced a final report of projects and their business cases.

Then the EIP Center started to run a few well selected pilot projects to show the feasibility of the green concept. With several sound business cases established for the sale and distribution of waste steam generated by a number of companies in the district, the Center worked with those companies to undertake the permitting, financing and construction needed for implementation. In the first phase, steam networks were established between two pairs of companies, which showed very positive results. For example, Sungam Municipal Waste Incinerator Facility and Hyosung Company together invested US\$5 million in the network but accrued over US\$7 million per year in cost savings. Steam replaced enough fossil fuels to reduce carbon dioxide emissions by 55,500 tons per year, and Hyosung generated so much excess steam that it made sense to expand its production facilities, employing another 150 people.

With demonstrated success, several more projects came online quickly, and the rationale for larger scale public-private investments in the infrastructure for a “steam highway” became

evident. Eventually, US\$26 million in public investment established a six-kilometer steam pipeline with multiple entrances and exits, allowing companies that invested in the infrastructure to connect their facilities to the highway. This is expected to reduce GHG by 100,000 tons per year while creating US\$20 million in energy supply and cost savings.

At every step the Ulsan EIP Center was the lead coordinator, articulating the vision for park-level symbiosis, making the business case, and negotiating commitments and prices with participants, who had to find a way to share the costs and benefits of these joint projects. Company due diligence typically took about a year, while negotiations lasted anywhere from three months to more than four years.

By the end of 2014, eight years after Ulsan EIP's first symbiosis was established, projects involving 31 companies were up and running. These generated annual cost savings of US\$74 million, new revenue of US\$45 million, and the following environmentally beneficial reductions per year:

- 487,626 tons of carbon dioxide
- 196,102 tons of energy
- 79,007 tons of wastewater
- 38,544 tons of industrial by-products
- 4,052 tons of air pollutants

Today, Ulsan EIP enjoys a global reputation that brings new investments from companies for whom the symbiotic aspect is a driving factor. As of the publication of this note, a German chemical company is planning a US\$500 million investment project in Ulsan, attracted by cheap utility cost and stable raw material acquisition through industrial symbiosis. In addition, this concept is being tested in other developing countries, for example, in eight low-carbon export processing zones in Bangladesh.

### **Challenges and lessons learned**

According to a Director of the Ulsan EIP Center, the Ulsan EIP experience was private sector-driven. The government-created center was a catalyst and focal point for the discussions that occurred among private companies, but it was the companies themselves that determined whether there was a business case for a project. The greatest challenge to Ulsan EIP Center was, therefore, in convening, engaging, and enlisting investors that were not normally enthusiastic about government involvement in the workings of what was felt to be an already well-functioning industrial ecosystem.

During the mapping of a park's companies and their inputs and waste, most companies were secretive and did not want to participate, viewing EIP Center experts as "spies" out to discover environmental violations. Even those companies that were relatively welcoming had little interest in proactively pursuing GHG mitigation measures, as they were not a part of their core business and had little incentive to propose them to their headquarters. Ulsan EIP Center addressed these reservations by framing the project at every turn as a business innovation to enhance efficiency, risk mitigation and profit. Ulsan EIP Center also gave stakeholders the company mapping and list of potential projects upfront as an enticement and demonstration of the project's commitment to solving practical problems that the companies were facing.

Once buy-in was achieved and the first phases of the EIP project were implemented, project successes were well-publicized with credit freely given to all stakeholders involved, thereby strengthening their resolve and bringing in new waves of participants. According to the Director of the EIP Center,

leadership and the patient building of a series of achievements, one after the other, have been the key to success.

### **LESSONS FOR IPAS**

The cases of InvestSA, the PDC and the Ulsan EIP Center have significant differences, in terms of IPA nature, jurisdictional size, level of industrial development, and green activities facilitated. Yet their challenges and successes demonstrate certain shared characteristics. This suggests that most IPAs with green objectives could benefit from an understanding of their lessons learned. Five main lessons stand out:

1. Government policies matter. The three cases discussed in this note each started with a different set of local characteristics which needed to be examined—close vicinity of many industrial activities in Ulsan, but little connectivity between companies for waste disposal; good potential for renewable energy in South Africa but a nascent renewable market with very limited manufacturing activities; and a sizable pool of cleantech startups in Portland but none that had really taken off. The government's vision in Ulsan, public policies in South Africa, and environmental credentials with local government support in Portland were all instrumental in creating investment opportunities.
2. IPAs and partners need to 'think outside the box' to identify opportunities and ways to use FDI to green their economies. It usually requires innovative approaches that take into consideration local market conditions and IPA resource constraints. Green investment opportunities are widespread, both in the development of renewable energy sources and the greening of existing

economic activities. The challenge is to identify an appropriate target area, and select the right model to tackle hurdles. The case studies in this note show that an agency can take a light approach in some cases, while a more comprehensive approach may be necessary under different conditions.

3. Green investment opportunities and business cases need to be visible. Investment promotion and business development agencies can make a difference by undertaking successful pilot projects or preparing a pipeline of bankable projects, which can be readily promoted to potential investors. For example, IPAs can help create viable business cases (InvestSA) or show investors in traditional industries how applying low-carbon practices can be profitable (Ulsan EIP).
4. Promoting green FDI requires strong sector knowledge and a focused strategy based on sector competitiveness. Both market development and policy support contribute to a sector's competitiveness. A few basic studies can go a long way to identifying sector gaps and top opportunities for investment promotion. It also helps developing in-house expertise.

5. IPA partnerships and networks can help broker opportunities in the formative green economy. This was evidenced in all three cases, where IPAs facilitated linkages with domestic suppliers, matched venture capitalists to technology developers, and organized partners in industrial symbiosis.

## CONCLUSIONS

Most green industries and their technologies are relatively young, with markets and value chains that remain fluid and owe much of their early growth to supportive public policies. IPAs that understand well that landscape and design strategies around the most competitive sectors are in a good position to connect investors to their markets.

As demonstrated by the three case studies, IPAs and business development agencies can make a difference in promoting green investment by developing expertise, targeting the right sectors and activities and creating or demonstrating the business case. Equally important is the development of local absorptive capacity, so that linkages and partnerships could be created. The eventual networks that are formed will help retain green investment and secure a long-term impact on sustainable development.

